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ABSTRACT

This report presents the analysis and recommendations of a study which evaluated the federal demonstration program to institute linkage systems for health manpower planning in states. Following an introduction to the report, chapter 2 presents the basic concepts to define the health manpower decision system and to describe general characteristics of its context, structure, process, and output. Chapter 3 introduces the linkage program for evaluation by describing the background conditions in states which motivated the program, and by describing the implementation of the program by the federal government. The overall evaluation of state planning and linkage systems is presented in chapter 4. The decision systems in states are ranked according to their degree of integration, the planning input to decisions, and the extent of decision-making capacity development. Chapter 5 examines the factors which determine effective planning and linkage systems by identifying contextual factors that discriminate between the more effective and less effective decision systems. Chapter 6 examines the strategic and management factors in the implementation of the individual linkage projects in the states. Finally, chapter 7 draws on conclusions from earlier chapters to make recommendations to state and federal planners and policy-makers concerned with health manpower. (JH)

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EVALUATION OF STATE LINKAGE SYSTEMS FOR HEALTH MANPOWER PLANNING AND EDUCATIONAL RESOURCE DEVELOPMENT

Final Report

June, 1979

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EVALUATION OF STATE LINKAGE SYSTEMS FOR HEALTH MANPOWER PLANNING AND EDUCATIONAL RESOURCE DEVELOPMENT

by

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PREFACE

This document presents the analysis and recommendations of a year and a half study which evaluated the Federal demonstration program to institute "Linkage Systems for Health Manpower Planning" in states. The study was conducted pursuant to Contract #HRA 231-77-0071 for the Bureau of Health Manpower, HRA/DHEW. The work of this study was completed by the diligent efforts of numerous individuals.

The Government Project Officer has been Ronald B. Merrill of the Office of Interdisciplinary Programs, Division of Associated Health Professions. He has provided the overall guidance for the conduct of the study. In addition Ms. M. Katherine McGuire, Evaluation Coordinator of the Bureau of Health Manpower, has contributed significantly to the study as a government representative and as a member of the Advisory Group.

The Advisory Group has reviewed the products of the study at each of three steps in the research, and individually have provided assistance and guidance throughout the project. The Advisory Group brought a broad array of expertise and experience to the project and has been most helpful in guiding the project. The names of Advisory Group members are attached at the end of this preface.

The conduct of this study included site visits to twenty-two states in nine Federal regions. Five of the states had not received Federal money for a linkage project. The cooperation of numerous individuals in each state and regional office has been most essential to the results of the study. We are especially appreciative to the individuals in the regional offices and states who acted as liaison representatives to help arrange our visits, to provide data, and to verify site reports. A number of these generous people went out of their way to provide us transportation and make us feel at home in their state. The names of the regional project officers and state liaison representatives are attached at the end of this preface.

The project staff for the study consisted of Perry D. Cohen, Alan B. Cohen, Martin Chin and Sherryl L. Talton. The project director was Perry D. Cohen, who supervised all aspects of the study. He developed the research strategy and methods; he led site visits to 9 states; he designed the conceptual framework and analysis; and he has been principal author and editor of this report. Mr. Alan B. Cohen provided necessary intellectual stimulation and support throughout the project. As Senior Analyst, he played an important role in development of conceptual models during the exploratory analyses, and he contributed significantly to the analysis of the contextual factors associated with linkage development. Mr. Martin Chin also made an outstanding contribution to the project. As site visitor for eight states, he not only contributed substantially to the data gathering, but played a major role as well in the initial analysis of data in site reports. Mr. Chin also made an important contribution in the analysis of linkage versus matched non-linkage states. Ms. Sherryl Talton served diligently throughout the data gathering phases of the project. Ms. Talton had major responsibility for setting up and coordinating the visits to the 22 states; she was a visitor to 13 states and principal site report writer for most of those.

Other staff of Urban Systems Research and Engineering also played important roles in the final product. Dr. Judith A. Segal was the Research Evaluation Committee representative for this project. As such, she reviewed all products and provided informal advice throughout the project. Ms. Sylvia Bell was project secretary, responsible for typing and clerical chores. She was ably assisted at different times during the project by Susan Graydon, Robert Fentress, Lisa De George, Pat McGloin and James Prunty. Also, Claire Nivola designed the cover of the final report. Finally, the management of USR&E, Anthony Blackburn, John Anderson, and Marilyn Rymer have played an important role in the project by their unwavering support for a high quality product.

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EXECUTIVE SUMMARY

One of the most critical resources in the health care system is the supply of manpower to deliver services to the population. During the past several decades, advances in the science of medicine have spawned a rapid proliferation in the varieties of health professionals and an increase in the complexity of the manpower system to educate, certify and employ those professionals. Recognizing the limited past efforts to plan for the appropriate numbers and types of health personnel and the important Federal role in health and education planning, the "Linkage Program" was initiated to improve health manpower decision-making by demonstrating effective connections between planning capabilities and the resource allocation process for health manpower in the states. Under the authority of Health Manpower Education Initiative Awards (HMEIA) of section 774(a) of the Comprehensive Health Manpower Act (PL 92-157), the Health Resources Administration funded 22 states for two to four years to study health manpower requirements and develop mechanisms to link planning and resource allocation.

This study has been conducted to evaluate the accomplishments of the linkage projects in states and to make recommendations about the future applicability of the concept. The objectives have been:

- To describe the development of state linkage systems;
- To assess the impact of linkage systems on the health manpower decision system;
- To develop general concepts to describe the social processes of planning and implementation of interorganizational decisions;
- To provide information and recommendations to state and Federal health manpower planners about linkage systems and how they might be developed in states and nationally;
- To provide baseline data to describe health manpower decision systems for future assessments.

In order to accomplish these evaluation objectives a two phase field study was conducted. Using concepts from the CIPPE* framework for evaluation, the first phase was an exploratory analysis of six states with linkage contracts chosen to represent key project and state context variables (type and location of the contract, health manpower supply, and planning characteristics of the state). Based on data from these states a refined framework for evaluation was developed to define variables and data gathering instruments for phase two. Eleven linkage states and five matched non-linkage states were then selected for analysis based on characteristics of the state context for health manpower decision-making (health manpower supply and production, state fiscal capacity, data, and education planning capacity). Interviews with a wide range of actors in each state produced data for site reports discussing the context of health manpower decision-making, the structure and process of decision-making, the linkage project strategy, and the effectiveness of the system. Finally, based on site reports, a comprehensive analysis of the seventeen linkage states and the five matched pairs of linkage and non-linkage states was conducted to produce the descriptions, classifications and assessments of this final report.

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* The CIPPE model was designed by Daniel Stuffelbeam of Ohio State University for evaluation of educational decision-making in terms of Context, Inputs, Process, Products, and Effectiveness.

Several types of analyses have been performed in the evaluation. First, descriptive analyses have been conducted on the factors in the state context and the factors in linkage projects which are important to the health manpower decision-making system. These analyses have provided the groundwork for four types of evaluations: 1) an evaluation of the effectiveness of the planning and linkage system and the linkage projects in the states, 2) an evaluation of the contextual factors associated with effective linkage systems, 3) an evaluation of strategic factors in linkage projects associated with effective linkage systems, and 4) a comparison of linkage and matched non-linkage states to ascertain the effects of concurrent decision system developments.

Major Findings and Recommendations

The aim of the linkage program was to improve decision-making about health manpower by improving planning and by improving coordination among decision-makers. The assumption was that more informed, better implemented decisions would ultimately improve manpower problems and hence improve the delivery of health care. While the impact on health manpower problems was the ultimate goal of the program, investigation of these outcomes was both beyond the scope of this evaluation and premature because the outcomes of the decisions had not yet been felt. Thus, the effectiveness of the program was judged in terms of its immediate objectives of improving the capacity of states to plan for, coordinate and implement decisions.

The evaluation investigated the structure of the health manpower decision system, including the roles and responsibilities of different service agencies (e.g., schools, professional organizations, health care providers) and planning/policy agencies, and the unification of organizations in the various service sectors (e.g. education, health). The process of decision-making was also investigated, including the amount of collaboration among decision-makers in different organizations or sectors, and the extent that routine (or formal) procedures existed. The products of the decision system were also evaluated, including technical planning products, such as data capability, and coordination products, such as linkage mechanisms to bring together either planners and decision-makers or users and producers of manpower.

From these evaluations a well developed decision system has been defined as one which performs decision functions and coordinates within and between the functions in the following task areas: 1) data and information, 2) analytical research methods, 3) goals and priorities, 4) comprehensive plans, 5) choices among alternatives, 6) initiation of action, and 7) evaluation and control of outcomes. In addition, a well developed decision system is one which can incorporate information and establish consensus policies for all occupational categories in a broad range of substantive issue areas, including program development (for education and manpower service), quality assurance (licensing, accreditation), manpower utilization (organization of care delivery) and resource allocation (budgets).

The assessment of the effectiveness of planning and linkage systems concluded that the utilization of a concept of linkage which is aimed at development of the structure and process of the health manpower decision system is necessary for effective planning and implementation of decisions. States which have displayed the most effective decision systems have emphasized development and coordination of the structure of the decision system in their linkage projects through the development of administrative decision processes and strong linkage mechanisms. Although technical planning capacity is important, research and data capabilities alone are not sufficient for an effective decision system.

Health manpower is primarily the responsibility of state governments. Although the Federal Government plays a considerable role in the support of education and manpower service, most professional training is done in state educational institutions, practice regulation is under state law, and health professionals participate in local labor markets. Given the utility of the linkage concept, it is recommended that states take steps to develop planning and linkage systems to improve health manpower decision-making.

In that each state is unique the following are general recommendations about the factors which are important in a process of development and change to improve the system. The change steps are: 1) assess conditions for change, 2) design strategies for development, and 3) implement change strategies.

The first step in the development process is to carry out an assessment of the contextual conditions of the decision system. Findings of the study indicate some of the important factors are as follows:

- While the actual supply figures for health manpower categories have no relation to decision system effectiveness, the perception of a problem by policy makers, as indicated by the priority placed on health manpower issues, is strongly related to system effectiveness.
- The trend in state (or Federal) appropriations can be an opportunity for more efficient coordination when funding is decreasing, and can create greater autonomy among agencies when funds are increasing.
- The political environment of the state legislature and executive branch is where the more general demographic and regional characteristics affect decision system development. States with relatively strong legislatures with respect to the executive have less effective decision systems.
- Very central to development of decision systems is the development of political resources by core (planning) agencies who guide the decision process. These resources include: administrative authority (e.g., budget, program, or quality review), political

coalitions, access to information and policy-making forums, technical or substantive expertise, legitimacy, and discretionary funding.

- The structure of the sectors of the decision system impacts upon its effectiveness. States with more unified public education and less influential private education have more effective decision systems. In general, the more consolidation within the sectors (health, education, manpower service, policy/finance) of the health manpower system, the more readily sectors can be linked and the more effective is the system.
- Problem-solving ability in the system is important for long-run effectiveness. Both technical expertise (analytical research skills) and substantive knowledge (problem understanding) are required.
- Agency resources and motivations for initiating linkage system development are also important to the success of developmental efforts. Resources and objectives should be in line with system development requirements, or other resources should be obtained.
- No one location is uniformly best to carry out linkage development. Planning agencies located in a cabinet or state administration level generally have a broad enough perspective and an appropriate role and resources to start decision system development. State Health Planning and Higher Education Agencies should play a central role in the decision system. Coordinated planning effort from several sectors is probably optimal.

The second developmental step is the design of an explicit strategy for improvement of the decision system. Steps toward strategy development include the following:

- Prerequisite to actual formulation of a strategy is the identification of gaps in the current decision system based on the assessment of the system and a conception of the elements and structure of a well developed system.
- Organizing core resources sufficient to fill gaps and plan a strategy is an essential step. This step will usually entail the formation of a management structure (e.g. an office for health manpower planning) to guide the process, and the formulation of core alliances (e.g. through cooperative agreements or an interagency task force for health manpower policy) to obtain minimum political/problem solving resources.

- Strategy formulation is the systematic sequencing of steps to fill system gaps. Factors associated with effective strategy development include the following:
    - Functional tasks, such as development of planning methods, are more successfully developed in the context of a narrow substantive problem or decision issue.
    - Coalition building is a more direct way to gain leverage than technical expertise;
    - Successful linkage strategies have initially developed the first generation of planning and rudimentary technical methods along with basic linkage structures. Then, refined methods have been used to improve the problem solving ability of the basic system. At the same time the scope has been expanded to address substantive policy relevant problems as they arise.
- Planning roles in the decision systems should be defined as supportive of the decision makers who take responsibility for policy and implementation.
    - For planning to be effective in a supportive role, a coherent administrative structure or linkage mechanism on a policy level should be in place for planners to support.
    - For planning to be effective, planners should report directly to administrative policy-makers representing each sector in the health manpower system.

On-going management and periodic updating of the decision system development strategy is the third developmental step. Several observations from the Linkage Program experience follow:

- Resources for on-going strategy implementation can be obtained from grants or by pooling resources existing in the system. Depending on the requirements of system development, management of resources can be centralized in an umbrella structure or decentralized with coordinating linkage mechanisms between major planning sectors. Initial development benefits from more centralized effort, while on-going implementation benefits from less centralization of planning into separate linked efforts for education (supply) and manpower utilization/health service (demand).

- Analytical, research and development tasks require a centralized staff of at least 3 to 5 analysts with a core of interdisciplinary skills (economics, statistics, planning, management).
- The image and identity of the development effort and of the health manpower decision system are important resources to be managed consistently with other resources.
    - An identity of linkage development connected to the health manpower decision system as a whole promotes incentives for collaboration in the system. Although such system identity is the ultimate goal, it should not be obtained at the expense of the identity of organizations in the system. Each organization in the decision system has its own unique mission and identity as well as shared goals and aspirations with other organizations. For example, professional schools have research goals as well as goals to train health manpower. The unique goals of separate organizations should be preserved in the system.
    - Enhancement of a specific organization's identification with the concept of health manpower planning and linkage can be an effective strategy at the formative stages of system development. Such an agency identity can help the agency gain legitimacy and leverage to become a focal point for information and planning. This is especially important to enhance consolidation of the different sectors, as well as to help accomplish separate goals.
    - Balance of agency identities across sectors in the system is important to insure balanced decision-making.
    - Development of an independent identity for a linkage development project does not further the development of health manpower decision-making as a system of organizations except when existing agencies have a negative identification with planning and linkage so that a separate system is warranted.

Recommendations to Federal health manpower planners and policy-makers are based on the findings from the evaluations of linkage states and the comparison of linkage and matched non-linkage states. In general, it is recommended that more efficient and effective use of government resources will be obtained by placing a high priority on development of planning methods and linkage systems. Health manpower planning is primarily a state function, but the Federal Government also has important roles to play. The Federal Government should conduct broad national planning, especially for categories of highly specialized, scientific manpower, and it should promote and facilitate inter- and intra-state planning. Although Federal health manpower planning and policy were not the focus of this study, two health manpower decision system developments have been identified from information in the states.

- The Federal Government should take concerted action to coordinate its policies and programs related to health manpower.
    - The aim of this coordination should be to promote state decision-making by consistent policy guidance which emphasizes the development of planning and linkage systems in the context of current programs.
    - The current Federal programs already have resources and incentives to facilitate development of most of the functional elements of the system so additional cost should be minimal. Examples of the actions of programs and agencies follow.

        The Bureau of Health Planning and Centers for Health Planning should emphasize health manpower planning and provide technical assistance to HSA's and SHPDA's to develop linkage systems.

        The Bureau of Health Manpower should emphasize planning and coordination among its programs.

        The National Center for Health Statistics should emphasize implementation of the Manpower Component of CHSS, and promote close coordination with planners and policy-makers.

        The Health Services Administration should promote health manpower planning and linkage systems through its manpower and health delivery programs by encouraging participation in state and local planning efforts.

The Alcohol, Drug Abuse, and Mental Health Administration should promote Federal and state level coordination of planning and manpower development in its health service programs.

The Veterans Administration should coordinate with Federal and state health manpower planners in health manpower training.

The Office of Education should promote health manpower planning and coordination at Federal and state levels in its programs for higher education planning and vocational education planning.

The Department of Labor should promote Federal and state level coordination of its manpower planning and training programs with other health manpower efforts.

  - To accomplish this coordination, an interagency task force should be formed to recommend permanent linkage mechanisms among HRA, OE, ADAMHA, DOL, VA, HSA and other agencies concerned about health manpower. One important product of this task force should be a complete study of Federal programs relating to health manpower planning, data, education, regulation, etc.

- To facilitate the development of state manpower decision systems, the Federal Government should provide support for research and development in the area of health manpower planning methods and linkage systems development.
  - Support should be available from HRA to implement planning and linkage systems in states where alternative resources do not exist, where the necessary system development groundwork is in place, and where there is a well conceived strategy for development of the decision system.
  - Basic R&D grants and contracts should be made available to develop tools for health manpower planning, especially interorganizational decision system development tools.
  - Additional Federal emphasis should be given to dissemination of planning tools and methods, including publications and technical assistance to planners in the field.

Chapter 1

INTRODUCTION

Chapter 1

INTRODUCTION

This report is the culmination of a one and a half year study to evaluate "State Linkage Systems for Health Manpower Planning and Educational Resource Development." The evaluation was conducted for the Bureau of Health Manpower, HRA/DHEW in order to assess the impact and lessons to be learned from a series of two to four year demonstration projects conducted in 22 states. This chapter presents the background and purpose of the study, a summary of the methods used, and an overview of the chapters.

1.1 Background and Purpose of the Study

One of the most critical resources in the health care system in this country is the supply of manpower to deliver services to the population. The rapid development of the science of health care in this century has produced a proliferation of health professional and paraprofessional specialists who require enormous varieties of educational skills and training. As a result, a complex web of educational institutions and health care institutions are collectively faced with the problems of producing appropriate numbers and kinds of skilled manpower to serve the needs of the public.

In the past, the bulk of the efforts toward health manpower development has been in the domain of various state, local and private educational health service institutions. Maintenance of the quality of training programs and their graduates has been the responsibility of the professions through accreditation activities of professional associations and licensing activities of states. Except for minimal state level planning in limited areas, overall coordination of production or recruitment of manpower has been largely on a laissez-faire basis by autonomous institutions.

In the most recent decade, the Federal Government has become increasingly involved in providing for the nation's supply of health manpower. The Comprehensive Health Manpower Act (PL 92-157) and the Health Professsions Educational Assistance Act (PL 94-484) have lent government support to the goals of producing an adequate supply and an appropriate specialty and geographic distribution of qualified health professionals to meet the health care needs of the people. In an environment characterized by extraordinary increases in the costs for health care and a persistent lag in performance compared to other developed countries on most indicators of health status, the accomplishments of the health delivery system have fallen far short of the national policy goals.

Faced with the multiple problems surrounding the coordination of health manpower development efforts and the rational allocation of both government and private resources to produce manpower, decision-makers have looked to planning activities for assistance. The Comprehensive Planning and Public Service Amendments of 1966 (PL 89-749) gave impetus to health planning efforts by establishing a system of regional and statewide planning agencies. Shortcomings in the scope and funding of the program, however, have resulted in varying degrees of success in the agencies among states. The Federal commitment to enhancing the ability of states to plan, coordinate and control the development of the health delivery system within their borders has been reemphasized in the National Health Planning and Resources Development Act of 1974 (PL 93-641) by establishing a strengthened set of Health Systems Agencies (HSA), State Health Planning and Development

Agencies (SHPDA), and Statewide Health Coordinating Councils (SHCC). However, with its heritage from the Hill-Burton hospital construction program and its program emphasis on facilities regulation efforts, such as Certificate of Need, current health planning practice has under-emphasized manpower planning.

Under the Health Manpower Education Initiative Award (HMEIA) authority of section 774(a) of PL 92-157, the Federal Government developed a program to assist the states in their efforts to coordinate decisions concerning manpower development. Since 1973 this authority has been utilized by the central and regional offices of the Bureau of Health Manpower to fund twenty-two states to develop linkage systems for health manpower planning.

State linkage systems contracts have been designed to alleviate problems associated with health manpower development by providing a focus for manpower planning in the states. The linkage system concept intended to join existing health manpower planning and production capabilities with policy making efforts to determine the purpose, amount, and distribution of resources for training health manpower. The goal has been to ensure a rational allocation of resources for manpower training based on actual state needs. This goal was to be accomplished by improving the technical inputs to state resource allocation decisions and local program development decisions. Equally important was the effort to improve the interorganizational communication and coordination among the education, health service, and planning agencies concerned with health manpower development. The linkage systems are important because of the increasing responsibility of the states for decisions about health service production factors. Manpower development decisions are particularly relevant because they impact on expenditures in other areas, including facilities.

Based on experience from the demonstration period of the 22 state linkage contractors, the goal of this study has been to evaluate the accomplishments of the states and the future applicability of the linkage concept. Specifically, the objectives

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of the evaluation have been:

1. To describe the development of state linkage systems in twenty-two states (seventeen linkage states and five matched non-linkage states);
2. To assess the impact of linkage systems in terms of both Federal and state objectives for health manpower planning and educational resource development;
3. To develop generalizable concepts to describe the social process of state level health manpower planning, including what works and what does not work well. Such concepts emphasize the processes of decision-making and implementation of plans as well as the technical aspects of formulation of plans;
4. To provide information and feedback to the state contractors and the Federal Government on linkage systems activities in their own state and other states;
5. To provide baseline data describing the health manpower decision system in the states for future assessments.

1.2 Methodology*

The research strategy to achieve the evaluation goals was an iterative procedure in which information and results from early stages contributed to more refined thinking and methods in later stages. Three principal evolutionary steps included:

- Develop research strategy and preliminary methods;
- Develop evaluation framework and refine methods;
- Synthesize data and develop recommendations.

After each of the three steps, an Advisory Group meeting was convened to review the progress and to comment on the materials developed during that phase of the project. In addition to the Federal Project Officer, the group consisted of eight professionals (three Federal representatives, three state representatives, and two academic experts) who collectively had the following experience:

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*Details of research methods are contained in the Appendix, including site selection procedures, respondent selection procedures, site visit procedures, discussion guides, and site report topics.

- Key Staff member of Linkage Project (4 members);
- Regional Project Officer of Linkage Contract (1 member);
- Experience in health manpower planning theory and application (6 members);
- Experience in organizational development as it relates to health resources (6 members);
- Experience in program evaluation with emphasis on health manpower planning (2 members).

1.2.1 Research Design

In the first step of the project, a set of preliminary methods and a strategy to carry out the scope of work were developed. Included were clarification of the purpose and major questions in the study, development of a preliminary framework for analysis and specification of data gathering methods for exploratory site visits, including site selection, site visit procedures, respondent selection, and discussion guides.

Three research questions were derived from the objectives of the study. One was aimed at description and clarification of the linkage concept and how it can be implemented. The second sought to assess the impact of linkages on decision-making in a state, and the third focused on Federal actions to facilitate decision-making. These questions guided the development of the framework for evaluation, including variables to describe elements of the linkage strategy and the health manpower decision system. The evaluation framework used concepts from the CIPPE evaluation model* to define factors for evaluation in the decision system.

Data gathering procedures were developed for exploratory site visits to six linkage states. States selected represented a broad range of project and state characteristics on the following variables. Projects with both standard and modified contracts were selected from locations in higher education agencies, health

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[*] Stuffelbeam, Daniel L. "Evaluation as Enlightenment for Decision Making" in Improving Educational Assessment, NEA, 1969.

agencies, and other state agencies. In addition, states were selected which had different manpower supply characteristics (for MD and RN) and different prior health planning and health manpower data achievements.

Data gathering was accomplished using a general discussion guide geared to the elements of the preliminary framework. In addition, a procedure was developed for entry into states via regional project officers and state liaison representatives. With the help of the liaison representative, respondents were identified in each state to include individuals from the linkage project staff, from key state agencies, from the state legislature, from public and private schools, and from professional organizations.

1.2.2 Exploratory Analysis

Based on the preliminary design, including comments from the Advisory Group, four to five day site visits were conducted in six states and their regional offices. Data from the interviews and project documents were compiled into site reports which described the linkage projects and the elements of the health manpower decision system, and which evaluated the impact of the linkage system in the states.

Throughout the exploratory phase, methods were refined based on site visit experience. Following the site visits, a set of updated research materials was prepared. The evaluation framework was further specified to address elements of the linkage strategy and the decision system which appeared to significantly affect the process of decision-making*. Variables and dimensions to describe the system were defined, and expectations and data requirements were specified. Based on the experience of the site visits, it was possible to develop a more detailed specification of the respondents needed to obtain a broad view of the health manpower decision system. For each of the twelve generic types of respondents, a separate discussion guide was developed to focus the questioning on issues likely to be pertinent to that respondent's relationship to the decision system. Of course, because of the different issues and different structures in each state, each interview was adjusted during the discussion to fit the specific situation.

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*The evaluation framework is presented in Chapter 2.

For the second phase of data gathering, eleven of the remaining sixteen linkage states were selected, along with five non-linkage states. Five variables were used to stratify the 50 states on important contextual variables. Three general contextual characteristics included manpower supply (MD, RN), state fiscal resources (ACIR* measure of tax burden), and manpower production (MD, RN). Two important decision system variables were the implementation of the CHSS manpower component and the location of educational planning in a coordinating council versus a governing board. Linkage states were selected from the stratified sample to nearly correspond to the distribution of all states on the selection variables. Using the same contextual variables, five non-linkage states were selected and matched with five linkage states for a separate analysis. By controlling for these five important contextual variables, an understanding was gained of the effects of concurrent health manpower planning developments.

1.2.3 Comprehensive Analysis

Site visits of three days each were conducted to each of the sixteen states selected for analysis. Following each visit the data were compiled into a site report which described: (1) the context for health manpower decision-making in the state, (2) the strategy of the linkage project (for linkage states), (3) the structure, process and linking mechanisms in the system, and (4) the impact of the linkage system on decision-making. The site report was the first step in the synthesis of field data into the variables and categories identified in the evaluation framework. Each site report was mailed back to the state liaison representative who was asked to offer comments and to verify the accuracy of the data in the report. In this way, factual information was checked, and the states were given an opportunity to respond to the study team's interpretations of the data.

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*Advisory Committee on Intergovernmental Relations, "Measuring Fiscal Blood Pressure of the States," 1977.

Based on the site reports, several kinds of analyses were conducted, and are elaborated in some detail in this report. All of the data were first arrayed on charts for each of the key variables selected for analysis (although all data in the site reports were important to interpretations, not all variables were analyzed in detail). Depending on the quality of the information and the significance of the findings, the analysis consisted of: (1) descriptions of the characteristics of states and linkage projects, (2) classification of projects and states, (3) qualitative assessments of program factors, and (4) correlation analysis (cross-tabulations and non-parametric statistics) of significant relationships. Because of limitations on the quality of data (to be discussed later), the results of the analyses have been formulated as plausible hypotheses for further verification.

1.3 Overview of the Report

The remainder of this report contains descriptions, evaluations, and recommendations of the study. Chapter 2 is an elaboration of the conceptual framework for analysis, which was developed at the culmination of the exploratory phase of the evaluation project. This chapter presents the basic concepts to define the health manpower decision system and to describe general characteristics of its context, structure, process and output. The definitions of effective linkage systems and effective decision systems are also presented.

Chapter 3 introduces the linkage program for evaluation by describing the background conditions in states which motivated the program, and by describing the implementation of the program by the Federal Government. The initiative and intent of both the Federal government and the early state contractors are described, and the procedures for decentralized program management are assessed.

The overall evaluation of state planning and linkage systems is presented in Chapter 4. The decision systems in states are ranked according to their degree of integration, the planning input to decisions, and the extent of decision-making capacity development. Each linkage project is also ranked on the amount of capacity change attributable to the linkage network relative to funds expended, and on the extent to which the project was institutionalized. In addition, a comparative analysis of a sample of linkage and matched non-linkage states is presented to demonstrate the impact of the projects in linkage states beyond what was occurring concurrently in other non-linkage states.

Chapter 5 takes a closer look at factors which determine effective planning and linkage systems by identifying contextual factors that discriminate between the more effective and less effective decision systems (from Chapter 4). The health manpower problems encountered in states, the general demographic and political factors, and the baseline characteristics of planning and organization in the decision system are assessed.

Chapter 6 delves into the strategic and management factors in the implementation of the individual linkage projects in the states. Strategic approaches observed in the states are assessed; the organization and management of political resources and technical skills for strategy implementation are evaluated; and the outputs of strategies and linkage mechanisms are described.

Finally, Chapter 7 draws on conclusions from earlier chapters to make recommendations to state and Federal planners and policy-makers concerned with health manpower. In addition, the linkage concept and its utility are clarified, and the elements of an effective planning and linkage system are defined.

Chapter 2

FRAMEWORK TO EVALUATE LINKAGES

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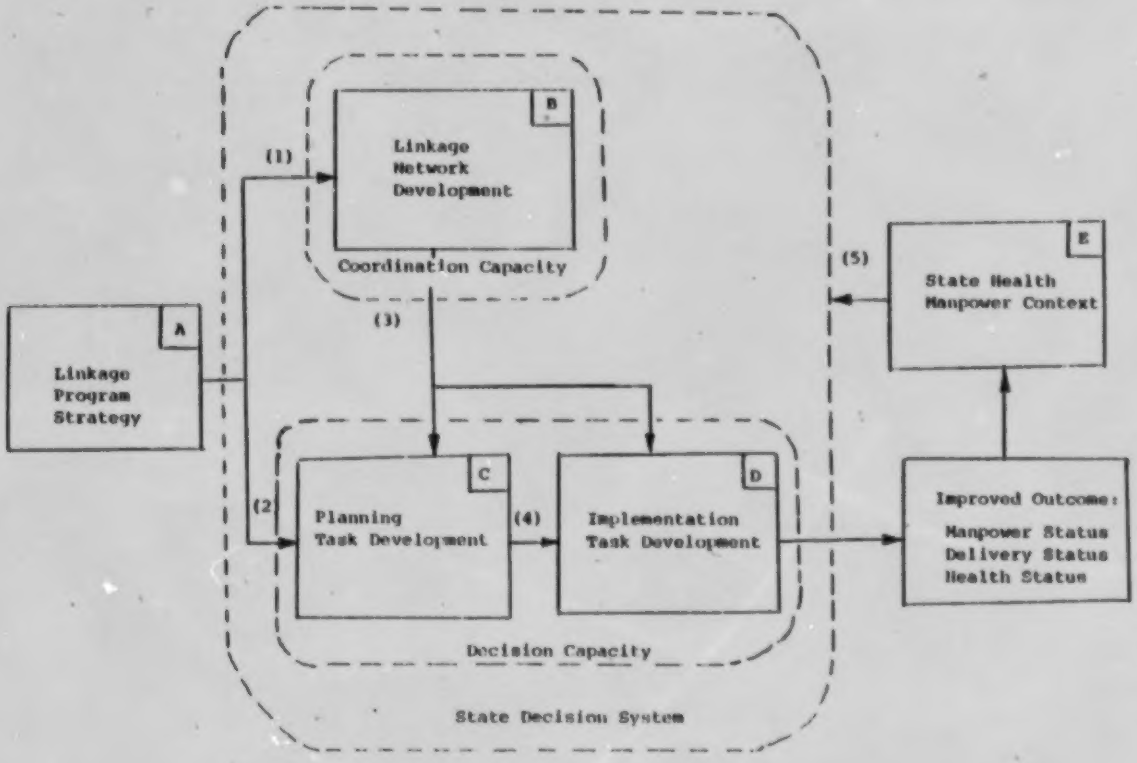
Linkage programs were designed to develop health manpower planning capability in states in two ways: enhancement of the formal and informal relations among organizations concerned with health manpower policy, and direct development of health manpower planning and implementation tasks. This chapter develops a conceptual framework to analyze the key elements of linkage projects and health manpower decision tasks so that effects of the program can be identified and distinguished from each other and from outside developments. After broadly defining the framework and dimensions that subdivide the system into categories which describe actors and their decision-making activities, characteristics of each of the evaluation variables will be elaborated.

2.1 Overview of Conceptual Framework

The evaluation framework for linkages defines the key decision-making processes which are the objects of linkage programs, and postulates the interrelationships between these processes. Figure 2-1 illustrates the framework. The linkage program strategy (A) is intended to impact upon the states's health manpower decision system (B, C, D) through linkage mechanisms: (1) to improve coordination capacity through planning and implementation inputs, and (2) to develop decision-making capacity. Throughout decision-making, the state context for health manpower decisions (E) defines issues to be addressed by the system, and sets

Figure 2-1

EVALUATION FRAMEWORK



B
Linkage Network Development
Coordination Capacity
(1)
A
Linkage Program Strategy
(2)
(3)
C
Planning Task Development
(4)
D
Implementation Task Development
Decision Capacity
State Decision System
(5)
E
State Health Manpower Context
Improved Outcome:
Manpower Status
Delivery Status
Health Status

constraints on the actions open for the system (5). Internal to the decision system, coordination capacity is improved by the development of a linkage network of actors in the system (B), while decision-making capacity is enhanced by development of planning (C) and implementation (D) tasks. The output of network development, integration of decision-making (3), improves both the planning and implementation decision processes, while development of planning (C) yields products (4) to rationalize and improve implementation tasks (D).

Ultimately, more informed, better implemented decisions are expected to improve outcomes for manpower and health delivery, and hence will change the problems and context for decision-making. Investigation of the outcome variables is not only beyond the scope of this evaluation, but it is premature to attempt to measure such outcomes at this time because, in most instances, the effects of decision-making have not yet been felt. Thus, the impact of the linkage program is assessed in terms of the impact on the decision system and the capacity for decision-making.

2.1.1 Definitions

Linkage - a connection between actors in a decision-making system (or other task system) which serves to facilitate communication and joint influence in order to coordinate actors concerned with specific policy issues. For purposes of the present analysis, linkages are restricted to those lateral relations between and among separate, relatively autonomous actors concerned with health manpower decisions. Linkages associated with hierarchies of authority and reporting relationships are part of the basic structures to be linked and, as such, are treated separately.

Linkage Mechanisms - organizational devices composed of one or more types of formal or informal linkages to facilitate inter-organizational communications, exchange, influence, and coordination.

Linkage Strategy (A) - the objectives, approach and steps to achieve goals of establishing linkage mechanisms and planning capacity by actors in a decision system.

Linkage Network (B) - the set of formal and informal connections and linkage mechanisms among actors in a decision system with the purpose of integrating and coordinating the goals, plans, and actions of actors. The status of linkage network development is described by the structure of the interconnections, the process of interaction, and the output of integration of decision-makers.

Health Manpower Decision System - the set of actors performing activities to plan, coordinate and implement decisions which affect programs for health personnel. Programs and actors fall into four sectors--education, manpower employment, service, and policy/finance--and address four major types of decisions--program development, quality assurance, manpower utilization, and resource allocation.

Linkage Subsystem - set of actors and activities to utilize linkage mechanisms to develop networks of interaction among members and enhance the coordination capacity of the decision system.

Planning Subsystem - set of actors and activities to carry out planning functions (establish priorities, obtain information, perform analysis, develop plans) and coordinate input to decision implementation in order to enhance decision-making capacity in the system.

Implementation Subsystem - set of actors and activities to coordinate and carry out implementation functions (making choices among alternatives, initiating action and monitoring outcomes) in order to enhance decision-making in the system.

2.2 Dimensions and Units for Analysis

The health manpower decision system entails a complex arrangement of organizations and tasks which can be described on a number of dimensions. From one vantage, the process of decision-making in a state can be viewed from the perspective of the social interaction of actors who exercise intelligence and create the products of decision-making. From another vantage, the decision-making task can itself be analyzed as a number of functions aimed at different substantive areas. Each of the two viewpoints is important to the conceptualization of a health manpower planning and linkage system because each contributes to the output of the system. As described broadly in the evaluation framework, from the actor's vantage point, the coordination of information flow, resource exchanges, etc. is the basis of decision-making, while from the task vantage point, the actual decision products are produced.

The evaluation framework is designed to assess the impact of one vantage point (the network of interaction) on the other (the decision-making tasks), and the interaction between the two. One can thus assess the value of different approaches to improve the system. This section defines dimensions and subunits to describe the components of the two vantages (or variables), while the next sections identify characteristics of each variable which describe the system and its outputs from that vantage point and provide the criteria for assessment.

2.2.1 Actors

The actors in the decision system can be viewed in terms of different levels of aggregation. The most fundamental actor is an individual person. Individuals are aggregated for purposeful action into groups, departments, and organizations. Aggregates of organizations are linked into subsystem networks, while the whole system is the aggregate total of networks, organizations, and individuals.

For purposes of the evaluation of linkage systems, the most relevant unit of aggregation of actors is the organization. Within a state, formal organizations are representative of the vast majority of interests related to health manpower. State service bureaucracies, planning and regulatory agencies, private and public educational institutions, and associations of private providers are generally formally constituted, defined organizations. The importance of individuals cannot be underestimated in decision-making, especially in a highly political context, but for the most part, outside of legislative bodies, an individual's action can best be interpreted in light of his organizational representation.

Organizational units within a state can be described on two dimensions -- the program sector and decision level. Program sectors are areas of substantive service activities, and decision levels describe the breadth of focus taken in terms of generality of issues and time-frame of the decision. Other dimensions to describe actors such as occupational groups (e.g. medicine, nursing), levels of education (e.g., Associate Degree, Doctor), or type of service (e.g., acute care, long term care) are subcategories which can be used to further specify organizations in the system. Four program sectors are as follows:

- The Education Services Sector is concerned with all aspects of training health personnel for minimum qualifications to practice.
- The Manpower Services Sector is concerned with all aspects of certifying skills (credentialling), job placement (matching supply with demand), and maintaining skills (continuing education) for health personnel.
- The Health Services Sector is concerned with utilization of personnel in different modalities to provide health care to the population.
- The Policy/Finance Sector is concerned with provision of overall leadership and guidance to maintain and improve the health of the population and with the allocation of public resources to achieve these objectives.

Each service sector operates on three levels of decision-making as follows:

- Policy levels take the broadest perspective on problems and the longest time-frame to establish the general direction for action.
- Administrative levels plan and implement general policies, as well as manage and control specific programs.

- *Service* levels directly provide health care, education, and employment services.

These two dimensions encompass major actors concerned with health manpower in a state. For example, Figure 2-2 illustrates how actors in a typical state might be arranged on the two dimensions. As can be seen in the figure, one organization might conduct activities in more than one level and sector. Although each state will have a unique arrangement of actors, the two dimensions provide a framework for classifying and analyzing the configuration of actors in any state. The way in which the different actors are organized and linked together determines the character of the linkage network for health manpower in the state. (Section 2.3.1 will define characteristics to describe the network(s) in the state which can be used to assess the degree of development of the network of interaction.)

2.2.2 *Tasks*

Decision tasks are the work done and products developed by the system to carry out decision-making. Tasks include both political interaction, such as agreements or commitments which channel energy toward the decision, and intelligence activities, such as data gathering and analyses which illuminate the consequences of the decision. Decision tasks can be classified by the functions which go into the complete decision process and by the substantive type of decision as follows.

Decision-making here is the entire process of reaching and implementing a course of action. The point of choice is only one of the functions in the process and is not always the most important. This is because choices may be a ratification of past activities to identify alternatives or choices may be substantially altered in effect by the actions taken to carry out choices (especially for broadly stated policy decisions).

Seven decision functions identified below are divided into *planning* functions which set the stage for choices and *implementation* functions which take action steps. None of the functions is

Figure 2-2

ORGANIZATIONAL ACTORS

Level Sector	Policy	Administrative Planning	Service
1. Education Services	-Governor -Legislature		
Higher Education	-Higher Ed. Board	-Dept. of Higher Education -University System	-State Universities -Health Science Centers -State Colleges -Private Universities
Vocational Education	-Vocational Ed. Board	-Dept. of Community & Education	-Community Colleges -Hospitals -Vocational Schools
Secondary Education	-Board of Ed. -Local Boards	-Dept. of Education	-Secondary Schools
2. Manpower Services Occupations	-Governor -Legislature -Professional Assoc.	-Dept. of Labor	-Associations -University Extensions
Credentials		-Dept. of Regulation or Consumer Affairs	-Licensing Boards
3. Health Services Medical Care	-Governor -Legislature -Provider Assoc. -Coordinating Agencies (e.g., Dept. of Human Resources)	-Hospital Consortia -Health Statistics -Health Planners (SHPDA's, HSA's) -Health Dept.	-Individual Practice -Hospitals -Nursing Homes -Health Clinics -HMO's
Mental Health		-Mental Health Dept.	-State Hospitals -Mental Health Ctrs.
Other Social Services		-Other Agencies	-Local Health Dept.
4. Policy/Finance			
State	-Governor -Legislature	-State Budget Dept. -State Planning Dept.	-Medicaid
Federal		-DHEW HCFA OE DOL	-Medicare
Private			-Insurance Companies (BC/BS, etc.)

necessary for decision-making, and all are sufficient. Decisions can be made without planning, and indeed they often are; decisions can even be made without choices or action (non-decisions implicitly ratify the status quo). On the other hand, any one of the functions can be considered as a decision process in itself. The seven decision functions or tasks are:

Planning tasks

- Establishing goals and priorities
- Obtaining data and information
- Performing analysis and interpretation of information
- Developing comprehensive plans

Implementation Tasks

- Reaching specific choices
- Initiating action
- Evaluating and controlling decisions

Health manpower decisions can address a wide range of issues related to the preparation, employment, and utilization of personnel to deliver health services. Four major decision areas are as follows:

- Program Development decisions include the substantive design choices to establish or change education and manpower programs.
- Quality Assurance decisions are the professional or public reviews of programs (accreditation) or individuals (licensing, certification) to regulate high standards of service.
- Manpower Utilization decisions are health service organization and staffing choices which, in part, determine the demand for manpower and the supply of health services delivered.
- Resource Allocation decisions are the state, Federal and private awards of funding to achieve objectives for service, education and personnel.

The two decision task dimensions form a matrix of subtasks of the decision system illustrated in Figure 2-3. The matrix is a functional description of the decision system which encompasses all major areas of decision-making activity for health manpower. (Characteristics are presented in section 2.3.2 to describe subtasks of the decision system or the functional decision task system as a whole.) The outputs from the subtasks are the outputs of the system. To the extent that these outputs are effective in solving manpower problems, the decision system will be effective, and to the extent that the linkage system organizes functions to address decision-making intelligently, it too will be effective.

Figure 2-3

DECISION SYSTEM SUBTASKS

Decision Type Decision Function	Program Development	Quality Assurance	Manpower Utilization	Resource Allocation
1. Priorities				
2. Information				
3. Analyses				
4. Plans				
5. Choices				
6. Actions				
7. Evaluations				

2.3 Characteristics to Describe Evaluation Variables

The evaluation framework defines broad variables to conceptualize the elements of health manpower decision systems and the development of capacity in the system. This section elaborates on the framework by identifying characteristics which describe the structure and process of the decision system variables--Linkage Network Development, Decision Task Development -- and characteristics which describe the State Health Manpower Context.

2.3.1 Linkage Network Development

The basis of development of linkage systems is the establishment of a network of relationships among organizations and individuals who influence the course of health manpower decisions. A linkage network contains one or more bilateral or multilateral connections between and among actors in the decision system. Each of the connections or linkage mechanisms may have been established by the linkage project or elsewhere, and has a goal of coordination and integration of planning and implementation of decisions. Description of the network is a description of the structure and process of the aggregate of linkage mechanisms.

The structure of the network can be described in terms of the comprehensiveness to which all relevant actors are linked, the balance of actors from different parts of the system, and the centralization of interaction among actors.

- Comprehensiveness of a network describes the degree of representation in decision-making activities from all relevant segments of the system. The more program sectors, decision levels and occupational groups which are significantly connected to the network, the more comprehensive and less fragmented is the network. Comprehensiveness describes the proportion of segments (sector and level) which are represented and incorporated into interactions even though the network is actually composed of linkage actors representing different segments. Comprehensiveness can be determined for networks associated with any subtask in the system (e.g., a data collection network or an education program review network) or for the whole decision system. An indicator of comprehensiveness is the number of decision levels and sectors connected by a mechanism or the whole network. Networks which are more developed are more comprehensive in their connections to all sectors and levels in the system.
- Balance of a network describes the relative representation among segments of the system. A balanced network has an even distribution among the segments represented in the system. The greater the variation among segments, the less balanced is the network. Balance can be determined for subnetworks in the system by only considering the relevant segments which are included. For example, a health manpower data network can be expected to include actors from all program sectors, but may not include policy level actors. A measure of balance is the variance in proportion of actors across segments relevant to the network. More developed networks are more balanced among actors (segments) to incorporate an even viewpoint of decisions.

- Centralization of a network describes the configuration of interaction patterns among participants. A centralized network has all interaction linked to one point; a decentralized network has several focal linkage points (which may or may not be connected to each other) to which all actors are connected; and a dispersed network has no discernable focus. An indicator of the degree of centralization is the minimum number of points necessary to directly reach all actors in the network. More developed networks will be centralized or decentralized, and not dispersed.

The process of network interaction is described by the formalization of procedures to govern interaction, the intensity of contact among participants, and the institutionalization and continuity of interaction.

- Formalization of interaction in a network describes the degree to which procedures and terms for interaction in the relationships are specified, agreed to (usually in writing) and have some structural mechanism to execute them. A measure of formalization is the proportion of linkages in the network which are governed by a formal agreement or have a specified coordination mechanism, such as a committee or a joint appointment. By itself, formalization does not indicate a more developed network, but in conjunction with intensity of interaction, formalization indicates greater development. Formalization can facilitate network development, but it is not sufficient by itself to insure integrated decision processes.

- Intensity of interaction in a network describes the amount of contact among actors and the level of decision activity addressed by the network. The amount of contact includes the number and regularity of meetings and the type of meeting (face-to-face, telephone, group meeting, one-on-one). The level of decision activity indicates the importance of the interaction to the individual participants. More important, higher level activity addresses a wide area of the organization's functions or the core mission of the organization. For example, in an educational institution, a mechanism which addresses new education program approval will likely touch on a very important part of the future of the institution so that interactions in the mechanism will be intense. If the institution is a free standing health science center, health manpower planning will affect all of its programs so that interactions are likely to be intense. An indicator of intensity based on the level and breadth of concern is the organization status of the linkage network representative; a chief executive as a linkage representative will indicate high intensity. In more developed networks, the intensity of interaction will vary directly with the intensity of the issue being addressed. In less developed networks, important issues may not receive appropriate attention, but most issues will take a greater amount of high level effort than warranted.

- Institutionalization of interaction in the network describes the continuity and regularity of organization or system-wide support network interaction. An indicator of institutionalization is the past record of continuous appropriations and the long-term commitment of funds for linkage network mechanisms. Also, continued existence despite leadership succession indicates institutionalization. Another indicator is written or oral recognition by institutional leaders of the goals and objectives of network mechanisms. A mechanism with formal authority for decision tasks is also one with likely continuity. More developed networks will display more institutionalization of linkage mechanisms.

2.3.2 Decision Task Development

Linkage systems are intended to enhance decision-making for health manpower by coordinating actors and influence groups who are planning and implementing decisions. Ultimately the decisions will alter the status of health manpower, health services and the health of the population. The task of decision-making, which is the target of a linkage system, is made up of several functions which can be grouped as planning tasks and implementation tasks. Also, these decision tasks can be directed toward different subjects relevant for health manpower such as program development, quality assurance, manpower utilization and resource allocation. The structure and process of planning and implementation for each type of decision are what ultimately determine the decision outcome.

The following identifies characteristics to describe the state of development of planning and implementation tasks. The description of the structure of the decision tasks shows how task functions are differentiated and arranged in the decision system. This is to be distinguished from the structure of the linkage network which describes how the actors doing the tasks are connected and integrated. Likewise, the process of the linkage network describes the channels among actors through which communication and influence pass, while decision task process describes the transaction which goes through the channel to arrive at decisions.

The structure of the decision-making system is described in terms of the consolidation of decision tasks across functions and decision types, the complexity of issues raised in the system, and the amount of effort exerted toward planning and implementation.

- Consolidation describes the degree to which tasks (functions and types) are merged together into organizational units under unitary authority structures or linked together through linkage mechanisms. Consolidation reduces task complexity by coordinating several subtasks into one structure. Generally, a system will consolidate all functions of a given decision type. Thus, by combining planning, data gathering, etc. into one organization, the substantive issues of that type of decision (e.g., education program development) are well coordinated. Alternatively, a system can consolidate functions across all tasks. For technical functions such as data gathering, a central core of specialists to serve different decisions can be a benefit. An indication of consolidation in a decision system is where a few actors perform many tasks. A measure of consolidation is the ratio of tasks to actors in the system. In general, more consolidated systems are easier to coordinate, more collaborative and better developed.

- Complexity of the decision system describes the number of different factors which are considered when decisions are taken. More complex decisions will consider the impact of actions on several types of decisions, while less complex decisions will be narrowly focused. For example, education program decisions are less complex if they only make curriculum choices, but are more complex if they consider issues of certification, utilization, and supply and demand for manpower. One measure of system complexity is the number of actors from different sectors typically incorporated into decision-making. More actors bring different viewpoints and approaches to be incorporated into the decision, and thus increase the number of factors considered. Systems are necessarily complex to deal with complex issues, but less complex decisions are easier to make. At any level of complexity in a state (an indicator of state complexity is size of population or budget), a decision system which is less complex is easier to manage and more developed.

- The amount of effort toward planning and implementation in the decision system describes the influence structure of actors in each sector as well as the operative priority structure of the decision system toward health manpower problems and decision tasks. The amount of effort and the distribution of influence is indicated by staff time, fiscal resources, expertise, and authority devoted by actors to planning and implementation functions for different decision types. In general, decision systems which display greater effort toward planning and implementation of all decision types will tend to confront difficult problems and make intelligent choices so they are more developed.

The process of the decision system is described in terms of the collaboration versus competition among decision-makers and the routinization of decision tasks for each of the four decision types (resource allocation, quality assurance, program development, and manpower utilization).

- Collaboration in decision-making versus competition describes the degree to which parties work together toward joint objectives rather than work separately toward mutually exclusive objectives. Collaborative processes are indicated by a sharing of information between actors and a subsequent accurate perception of other actors' objectives, methods, problems and concerns. In collaborative decision-making, there is a sense of group rewards and group resources rather than individual actors protecting individual resources, rewards and interests. Collaborative processes are indicated by free movement of staff and resources between actors to accomplish overall tasks and to facilitate mutual understanding. On the other hand, competitive processes are characterized by fixed adherence to resource allocation to each separate competing actor. The more collaborative and less competitive the interactions on individual task components are, the greater will be the development of the decision-making system.

- Routinization describes the degree to which a set procedure is followed closely during decision-making. A routine procedure is generally most relevant only for specific recurring decisions which can often be programmed with highly deterministic computational procedures and formulas. Routine procedures can also be used for more general types of decisions which require individual attention by the specification of administrative steps and criteria to be followed. Non-routine decisions are the infrequent or highly controversial choices which are often unanticipated or have long run implications. Routine decisions are indicated by the steps and procedures to make choices, and a routinized system is characterized by few crises. Routine decisions almost always utilize data and analytical input in the process, while non-routine decisions can benefit from planning but may not use it. Even though there is a danger in over-routinization which ignores changes in circumstances and special cases, more routine decisions are generally easier to reach and incorporate a wide range of inputs and hence represent more developed decision-making.

2.3.3 State Health Manpower Context

All linkage system interactions take place in the larger context of the state economic, social and political system. The context sets the stage for the development of linkage networks and it incorporates the products of decision systems. Therefore, any generalization about linkage effects must be contingent upon contextual variables. The following describes a number of key contextual variables which play a part in linkage system development.

The health manpower problems in linkage states determine the need for policy about health manpower and hence the need for a planning and linkage system. Problem areas are defined below.

- Health Manpower Supply characterizes the number of physicians and nurses in the state when compared to the national averages. This gives an indication of the relative magnitude of manpower resources in the state and the major manpower problems facing the state.
- Health Manpower Distribution characterizes the geographic dispersion of manpower resources and the types and levels of training (specialty distribution) available to provide services. Distribution issues include the adequacy of numbers of primary care physicians and advanced trained nurses.

- Health Manpower Quality characterizes the issues related to licensing registration, continuing education, discipline of health professionals, and accreditation of training activities. Particular issues might include practice legislation or the impact of foreign medical graduate migration patterns.

The general contextual factors might affect decision-making patterns in the state, and therefore, must be accounted for in any assessment of the pattern of decision-making. The size and demographic character of the state, the general political climate and the inter-regional rivalries all describe the state context.

- Demography of the state can have an important impact on the problems facing decision-makers and can place constraints on solutions. The proportion of population, rural or urban, by Census Bureau definitions indicates the demography of the state. This variable is correlated with manpower supply ratios.
- The size of the state in geographic area and population is a contextual variable which indicates the type of problems faced in the state and the ability to coordinate among actors. Low density states will have more difficulty communicating with all parts of the state and will have a smaller tax base to address problems.
- The political climate in the state describes the structure of decision-making with respect to two key governmental institutions: the executive branch and the legislature. The relative powers of these two and their political orientation will impact upon the general course of policy and budget decisions.
- State fiscal resources are important contextual factors which describe the ability of the state to attempt decision-making on large expenditures for health manpower. Two key subfactors related to total state fiscal resources for health manpower are the proportion of resources in the state from Federal sources and from private sources. These two factors indicate the leverage available in state government to affect change.
- The regionalism within the state describes the characteristics of inter-regional rivalry for state resources. The nature of the rivalry is an important factor in the dynamics of any state planning process. The regionalism can be one of three main types:

- Two or more roughly equal regions competing for state resources
- Two or more unequal "have" and "have not" regions competing for resources
- A large urban area competing with the rest of the state (can be "have" vs. "have not" as well).

In addition to the general contextual factors, the *history* and *maturation* of the decision system itself is likely to impact on linkage development. Therefore, the characterization of the context of the health manpower decision system also includes a *baseline assessment* of the structure and process of the linkage network development and decision task development variables.

2.4 Effectiveness of Linkage Systems

Evaluation of the effects of linkage networks and programs requires definition of what constitutes effectiveness and what criteria should be used to judge the state health manpower decision systems and linkage development programs. This section delineates operational definitions of the evaluation criteria in terms of: 1) the outputs of network development and the development of planning and implementation decision tasks, and 2) the outputs of specific linkage programs and strategies to develop decision systems in relation to the starting point and concurrent changes in the system. Based on the definitions, states are characterized in Chapter 4 on each criterion as a basis for assessment.

2.4.1 Decision System Output Measures of Effectiveness

The bottom line of any evaluation effort is the assessment of the outputs of the system or process being evaluated. The outputs are the end products which fulfill objectives and hence move the system to a more desired mode of functioning. Linkage systems, including strategies for development and resulting networks of integrated decision-makers, are an integral part of the state's decision system for health manpower. As such, the outputs to be measured ultimately are the policy and management decisions affecting supply, utilization, and quality of manpower. However, linkage systems contain a number of processes which precede the implementation of decisions, including development of planning for decisions, development of networks to integrate decision-making, and development of strategies and programs to establish networks. Each of the processes has an output which, in turn, is input to later processes; hence the outputs provide successive evaluations of the system.

The output of the linkage strategy and program--development of linkage mechanisms--is the key focus of this study and will be treated separately below (Section 2.4.2) along with the discussion of evaluation criteria for the specific Federal intervention. The assessment of a specific program to develop linkage and planning systems, however, is meaningful only if we can establish that the general concept of linkage systems is relevant to the final objective of effective health manpower decision-making. Thus, the output of network development--integration of decision-making (both planning and implementation) and the output of decision task development--decision making capacity development--are the principal output variables for evaluation.

Integration of decision-making describes:

- the amount of coordination of activities, resources, and information among partners toward joint objectives, and
- the depth of commitment among partners toward the linkage mechanisms which embody the objectives and toward the whole network.

The amount of coordination and commitment in a linkage network can be assessed for each linkage mechanism in the network and for the network as a whole. Coordination within each mechanism indicates the coordination within tasks addressed by the mechanism, while coordination of the whole network describes the connection between tasks in the decision system.

The coordination within a specific mechanism describes the degree to which information and resources are pooled and the extent to which activities are collaborative and directed toward joint objectives. In a coordinated mechanism, a weakness in planning methods will be seen as a group problem to be improved, not attacked. Legitimate conflicts of interest are isolated from other issues and from future interactions, and are dealt with in a straightforward manner. Actors are flexible and see other points of view in the quest for resolution of decisions.

Coordination between tasks in the decision system can be viewed in two dimensions. First, the coordination within each decision type (e.g., resource allocation, program development) can be assessed by the extent to which the actors, mechanisms or functions related to the decision type are linked together. Second, coordination between decision types is assessed by the linkage of different types of decisions in the network and by the consolidation of similar decision functions in the network.

The depth of commitment describes the quality of coordination and collaboration in decision-making, and the magnitude of the psychological bond among participants in the linkage mechanism. The permanence of the mechanism's existence over time and the degree of adherence to group decisions are indicators of the depth of commitment. Depth of commitment is a variable to describe an individual linkage mechanism. Depth of commitment in a network is an aggregation of the commitment for individual mechanisms. The proportion and number of mechanisms with high depth is a measure of commitment in the network.

Decision-making capacity development describes:

- The change over time in number, type and source of decision task products developed in the state to perform seven planning and implementation functions:

  - establishing goals and priorities,
  - obtaining data and information,
  - performing analysis and interpretation of data,
  - developing comprehensive plans,
  - making choices among alternatives,
  - initiating action,
  - evaluating and controlling outcomes.

- The degree to which planning products (data, analysis, goals, and comprehensive plans) directly and positively impact the implementation products (choices, actions, outcomes) of health manpower decision-making.

Products of the decision system are both the interim planning products and the actual choices and actions taken. Output of the decision system is determined by the types of products produced in the decision system.* A system which produces a greater scope and number of products has greater output capacity and hence is postulated to be more developed and more effective.

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*Health manpower decision-making products:

Planning Products

1. Data and Information
   - Vital Statistics Inventory
   - Health Manpower Inventory
   - Education Program Inventory
   - On-going Data System
2. Analytical Methods
   - Population Projection Methods
   - Manpower Supply Projection Methods
   - Manpower Needs Assessment Methods
   - Education Program Needs Assessment Methods
3. Goals and Priorities
   - for health manpower
   - for education programs
4. Comprehensive Plans
   - State Health Plans
   - Health Systems Plans
   - Higher Education Plans
   - Health Manpower Plans

Implementation Products

5. Choices Among Alternatives
   - Administrative Budget Allocation
     - --for Health Services
     - --for Education Programs
   - Administrative Program Review and Approval Mechanism
   - Administrative Mechanism to establish credentialling
6. Initiation of Action
   - Education Programs
   - Manpower recruitment, employment and retention programs
7. Evaluation and Control of Outcomes
   - Education Programs (quality and need)
   - Manpower Registration and Discipline
   - Supply and Demand for Manpower

Decision products are outputs of the decision system as a whole at any given time. Assessment of the degree of capacity development of the system in terms of products is determined by the change in number and types of products which exist at two different times. Products of the decision system can be developed by any of the individual actors in the system or by multiple actors separately or collectively. Assessment of the impact on development from any one source is determined by the number of types and changes in types of products from that source. Hence, the linkage project can be assessed by the types of products developed either alone or with other actors in relation to those developed previously or independently.

While the numbers and types of products produced measures the quantity of development, the quality of development is assessed by the extent to which products meet their objectives. Implementation products are thus evaluated in terms of the degree to which the statuses of health manpower, health services and ultimately, the health of the population are improved by the choices. Planning products are evaluated by the degree to which they are used and facilitate intelligent decision implementation. While assessment of the output and outcome of implementation of health manpower decisions is beyond the scope of this study, the quality of planning output can be assessed in terms of the degree of input to decision-making. The validity, reliability, specificity, comprehensiveness, timeliness, vision and acceptability of planning products for decision-making determine their degree of utility and hence indicate the quality of the health manpower decision system which is the target of linkage program effort.

2.4.2 Linkage Program Measure of Effectiveness

Evaluation of the Federal programs to develop planning and linkage systems in states has a narrower perspective than the general evaluation of the effect of linkage systems on health manpower decision-making. The specific linkage program has as an objective the development of planning and coordination of decision-making so that broad indicators of decision system outputs and processes, discussed in the last section, are relevant evaluation criteria. However, the criteria address the development of the system as a whole at one point in time. Factors outside the specific program which precede or follow the program may contribute to or constrain the accomplishment of the program objectives, requiring more refined measures.

Each state started at a different level of development so that assessment of a state's strategy must take into account the amount of change in the capacity to make coordinated, intelligent decisions, not only the end point. Also, the institutionalization of the linkage effort in the state after the project ended was an explicit objective of the project, because to be effective, planning has to continually coordinate and support decision-making. Furthermore, states and projects have different levels of resources to develop planning and linkage systems and different concurrent planning efforts aimed at the same objectives. Although the success at incorporating existing resources is an important evaluation criterion, the assessment must be controlled for the level of those resources available. Hence, linkage projects and strategies can be assessed on the following three criteria:

- Health manpower decision-making capacity development in the state:
    - Change in capacity attributable to linkage project
    - Total change in capacity of system
    - Proportion of change attributable or closely connected to linkage project
- Efficiency of capacity development relative to resources:
    - Linkage project resources
    - Linkage project and home agency resources
    - Linkage project and network resources
- Institutionalization of health manpower planning and linkage system development activities.

In summary, this chapter has presented the basic framework and variables to describe and evaluate the structure and process of health manpower decision-making and linkage system development. The framework is based on the conception of actors performing a number of planning and implementation functions at different decision levels and in different decision arenas (sectors) in the health manpower decision system. Characteristics to describe the networks of actors and the extent of development of decision-making are also presented. Drawing on the framework, operational definitions of effective planning and linkage systems and effective linkage development projects are specified. This framework is the basis for the descriptions and evaluations of the key components of the linkage program in the following chapters.

Chapter 3

FEDERAL IMPLEMENTATION OF THE HEALTH MANPOWER LINKAGE PROGRAM

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This chapter describes and evaluates how the linkage program began and how the Federal Government transformed the concept of a linkage system for planning into a demonstration program in twenty-two states. First, the background of the program is presented, including the problems that were addressed, the previous efforts directed toward the problems, and the original linkage concept. Then, the implementation of the concept by the central office and regional offices of the Bureau of Health Manpower is described, and pertinent administrative factors are evaluated.

3.1 Background of the Linkage Program

3.1.1 Health Manpower Planning Problems in States

Health manpower problems in this country have historically been viewed in semi-isolation from other prominent health care concerns, such as facility development, financing of care, etc. The reasons for this have been both political and economic. Until recently, manpower problems were generally perceived to be supply problems caused by market forces, and were thought to be remediable through increased manpower production. Since much of the educational resources for producing health manpower rested in the private sector, government involvement in manpower planning was limited, by choice, for many years to the regulation of the quality of health care personnel through licensure and credentialling requirements. Decisions regarding the numbers and types of health professionals to be trained were left almost entirely to the educational institutions themselves and, presumably, to the economic forces of the marketplace for health manpower labor.

In the past three decades, however, government interest in basic health manpower concerns has grown considerably. The post World War II shortage of medical and other health personnel induced the Federal government to sponsor programs supporting the establishment of new medical schools as well as expansion of existing institutions. Similar initiatives were directed toward encouraging increased production of other health professionals, most notably dentists and nurses. State governments also contributed to these efforts by committing substantial resources to the establishment of state-owned and operated health professions schools. The net result of these numerous actions was an expansion of both manpower production capacity and manpower supply.

While these activities were not totally out of context with other health planning initiatives of the period (for example, the Hill-Burton Act, P.L. 79-725, simultaneously encouraged hospital industry growth), they did reflect a fundamental lack of foresight regarding the potential system-wide consequences of uncoordinated expansion of manpower production capacity. It was not recognized until the mid-1960's that the so-called "doctor shortage" was no longer a problem of aggregate supply, but rather a symptom of relative maldistribution both in terms of geographic location and specialty practice. This realization came about in an era of unparalleled change in modern health care. Not only were the traditional roles of many health professionals undergoing transition, but the very organization of health services in this country was experiencing change and new health professions were emerging to fill apparent gaps in the existing service delivery structure. The narrow view of "health manpower" as comprising only physicians, dentists and nurses gave way to broader definitions which included other professions (e.g., optometry, pharmacy, podiatry and veterinary medicine) as well as allied health occupations, such as physical therapy, radiological technology and dental assisting.

With these structural and definitional changes came such questions as: 1) How many of each manpower category are needed? 2) Is the present supply of each manpower type adequately large and well distributed to meet estimated needs and/or demand? 3) Are present educational resources capable of meeting manpower production needs and/or demand? 4) What types of educational resources and training programs are required to improve manpower production capacity? and 5) What other alternatives (e.g., recruitment of personnel) are viable for meeting specified needs?

Despite growing interest in these questions during the late 1960's and early 1970's, few states were capable of addressing them in a structured and coordinated fashion. Effective, comprehensive planning for health manpower was constrained by several factors, including:

- lack of data and information--statistics on the supply and distribution of various health professionals were both incomplete and inaccurate. No single data source existed and, as a consequence, data were collected in a fragmented manner by several organizations, some public (e.g., state manpower licensing boards) and some private (e.g., state professional associations). In addition, virtually all states lacked the integrated, ongoing data system which is necessary for the compilation of reliable inventories of health manpower.

- lack of manpower planning methodologies--methods for determining health manpower needs or requirements were not well developed nor widely used in most states. Furthermore, methodologies for projecting manpower supply, particularly those based on econometric models, were largely rudimentary in their development.

As a result, few states possessed the requisite analytical capability to assess their present manpower statuses and to forecast their future supply requirements.

- lack of master plans for health manpower education and health services delivery--within the overall scheme of health planning, health manpower issues received relatively little attention and few states, if any, developed comprehensive health services plans. In most instances, manpower goals and priorities were never identified or articulated. Similarly, few states were able to develop plans for higher education, which outlined needed training programs for health manpower.

- lack of mechanisms for selecting among alternatives and for implementing decisions--the decision-making processes regarding resource allocation and program development were amenable to vested political influence. In a number of states, to political influence. In a number of states, higher education boards did not possess authority to review and approve proposed health manpower education programs, thus leading to indiscriminate proliferation of certain types of programs. In other instances, boards lacked the mechanisms whereby new programs could be encouraged and implemented.

- lack of coordination among organizations involved in health manpower policy decision-making--the major organizational sectors within each state (health services, health occupations education, health manpower, and health policy-finance) were not well tied together. Communication and coordination of activities were often lacking between key actors and organizations. The health occupations education sector was particularly fragmented in many states not only because of a stratified organizational structure (e.g., state universities, state colleges, community colleges, vocational education programs), but also because of decentralized decision-making among and within the different strata. In addition to making fundamental planning coordination difficult, this situation severely constrained the integration of planning and decision-making.

In view of these state-level problems, it became apparent to Federal and some state health manpower policy makers during the early 1970's that Federal encouragement of state manpower planning development was needed. Most important of all, though, it was recognized that development of technical capabilities alone (e.g., data systems, planning methodologies, etc.) would not be sufficient for improving the state-of-the-art. Rather, it was believed that attention must also be directed toward the organizational linkages for health manpower planning and educational resource development. The Linkage Program, as the concept came to be known, was established in 1973 as a means of tying together key actors involved in planning and decision-making for statewide health manpower policy. As a Federally sponsored initiative, the program sought to enhance the relationship between planning and implementation of decisions, and to elevate the status of health manpower issues within the larger framework of health planning.

3.1.2 Program Foundations

Several Federal programs, as well as initiatives in a number of states which addressed problems of health manpower planning, soon provided the starting point for development of the linkage program. Regional Medical Programs (RMP) began to encourage planning for health manpower in states, and a number of local-level Cooperative Health Education Systems (CHES) were established throughout the country to coordinate the users and the producers of health personnel, particularly nurses and allied health professionals. In addition, Comprehensive Health Planning (CHP) Agencies and Higher Education Agencies in some states also began to take an interest in health manpower issues, usually relating to physicians or nurses, but involving other manpower as well. Obtaining resources from a variety of state and Federal sources, agencies in a number of states began to collect data and develop strategies to plan for health manpower production, employment and utilization. Even though there were notable successes, especially at local levels, without continuous substantial resources, most efforts were rudimentary. Although some significant analyses and policy recommendations were produced for specific occupations, no comprehensive planning was done, and no on-going data collection on health manpower or health occupations education was established.

Two other Federal programs and several independent state iniatives (at least one facilitated by a regional office) were directly related to linkage system development. Around 1972, grants from the Health Resources Administration were given to a number of Academic Medical Centers to establish Area Health Education Centers (AHEC) or Systems (AHES) in order to improve health training opportunities, especially for medical residents, in rural settings. The program was intended to increase the availability of manpower and services in rural areas by establishing a nucleus for medical practice. The AHEC proposal from the University of Hawaii contained a section which outlined a strategy to develop a health manpower planning system in the State to help guide the users and generators of manpower by determining the numbers and types of professionals needed. When the AHEC proposal was not funded, this section became the basis for the first linkage contract in May, 1973. Arkansas had a similar experience with its AHEC proposal and was funded for the second linkage contract from Region VI late in 1973.

A second Federal program which was directly connected to the initiation of linkage contracts in some states, particularly in Region IV which had 6 linkage contracts, was the Cooperative Health Statistics System (CHSS) of the National Center for Health Statistics (NCHS). Beginning about 1974, implementation of the manpower component of CHSS offered a model process for establishing cooperative relations among suppliers and users of occupational data. In many states, the health statistics agencies which operated CHSS also provided research and analytical skills in the conduct of special studies. Since both data and analysis are necessary inputs to any planning system, health statistics are one logical point for development of the system. Several states attached linkage project funds to statistics activities to expand the scope of data in order to address planning and decision-making issues of education, employment and utilization of health manpower.

In addition to the Federal initiatives, several states recognized growing problems in the area of education and employment of health personnel, and developed their own initiatives with help from RMP, Regional Offices, etc. For example, the New Jersey Department of Higher Education supplemented state resources with a $50,000 grant from RMP to develop data on health manpower. Using simple methods to project requirements for different occupations, the data were incorporated into the Master Plan for Higher Education. Ideas for expanding planning and linkage capabilities were submitted to the Federal Government in an unsolicited proposal. Some of the ideas were incorporated into the standard scope of work for the national linkage project RFP, and New Jersey became the third state to receive a contract. In Virginia, as early as 1972, the Council of Higher Education had combined resources from the State legislature, which was interested in physician manpower, and from the Region III Office of DHEW, which was encouraging health manpower planning, to establish a series of committees concerned with health manpower studies. The linkage project provided for the continuation of this effort.

Four other states were primed and ready for linkage funding to facilitate and expand their own initiatives. South Dakota had established cooperative relations among key health manpower actors in their effort funded by Region VIII, DHEW to establish a core curriculum and career ladder for allied health and nursing education. The Ohio Comprehensive Health Planning Agency had a Health Manpower Committee since 1968, and had been seeking funding to enhance its planning capability. Wisconsin had convened a Governor's Task Force on Health in 1972 to establish

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priorities for health, including manpower issues, while Minnesota had established cooperative relations among three State agencies --Planning, Higher Education, and Health--to coordinate efforts toward a State policy for health personnel.

Other states had similar bases for establishing health manpower planning and linkages through state and RMP efforts (e.g. Connecticut) and through higher education planning and funding. Most other states which did receive a linkage contract had paid only limited attention to planning for health manpower in their Comprehensive Health Planning Agencies (314a) prior to the contract, but responded to Federal initiatives as an opportunity to develop manpower capability.

In sum, the foundation for linkage projects varied. A number of states actively sought support to fill in gaps and to strengthen their more or less ad hoc programs for improvement of health manpower planning and decision-making. The majority of states reacted to the opportunity presented by the Federal government to develop capability for health manpower planning from a usually more meager foundation.

The motivation and foundation previously attained by individual states proved to be an important determinant of successful development of planning and linkage systems. Six of the eight states that took steps to secure funding prior to Federal solicitation of proposals were among the states with the most effective decision systems (effectiveness as defined in Section 2.4 is analyzed for state decision systems in Section 4.1). In addition, connection of linkage projects to other state and Federal program initiatives had a generally positive effect on the implementation of the program. In keeping with the concept of linkage, the resources of the other programs could be used for dual purposes. Not only were the other program goals addressed, but a base for establishing cooperative relations (linkages) was instituted. This expanded the scope of the linkage effort to help develop the planning infrastructure to guide program inplementation of the several cooperating federal, state and private organizations. As will be evaluated in Chapter 6, the specific federal program connections and location in the state structure did make a difference in the basis for implementation of Linkages.

3.1.3 Program Concept

In the context of growing Federal involvement in health manpower education, the idea of planning and coordinating resource allocation was most timely. The linkage projects were conceived as a manpower initiative effort under the authority of Health Manpower Education Initiative Awards (HMEIA), section 774 (a), paragraph (E) of P.L. 92-157 (Comprehensive Health Manpower Act), "to assist State, local, or other regional arrangements among schools and related organizations and institutions to carry out the purpose of this subsection." From the Federal perspective, the purpose of the linkage program was to promote health manpower planning in states. Other Federal programs (e.g. RMP, CHP, CHSS, AHEC) had pointed to a need for planning, but the perception of the Bureau of Health Manpower was that even when planning was attempted, it was done in isolation of the producers, users, regulators, and others involved in actual decisions about health manpower. Hence, there was a need to link the various interested groups in order to make planning both meaningful and effective.

In keeping with the transition to greater local responsibility for planning and resource allocation, the major emphasis of the Federal initiative was the development of a mechanism in the state so that coordination could occur between planning and decision-making, and among the relevant state actors concerned with health manpower. Although the importance of the purely technical aspects of data gathering and planning were not underestimated (a number of the tasks in the standard contract were purely technical planning tasks), the primary intent was the development of a planning system in the state, which integrated the planning process with resource allocation decisions.

The program was originally conceived as a demonstration to be administered under central office control in ten states (one per region). Five of the states were to overlap with those participating in the Robert Wood Johnson Foundation's grant program to the Citizens' Conference on State Legislatures, and a common evaluation of the two programs was to determine the increased impact of both. This design broke down, however, when the five overlapping states could not be enlisted and when the management of the linkage program was decentralized.

3.2 Central Office Program Implementation

The program was initiated by the former Office of Special Programs, Bureau of Health Resources Development, where the first three contracts were awarded (Hawaii, Arkansas, New Jersey). Later, as part of a general move to decentralize programs, the principal management responsibility was shifted to the regions. In order to implement the program regionally, a concept paper and standard scope of work were developed by the central office staff. The concept paper briefly described the key elements of a linkage system, the guidelines for selection of linkage contractors in states, and the decentralized structure for administering the program. The scope of work outlined the specific steps to develop the planning and linkage system. Elements of the design and implementation of the program by the central office are evaluated below.

Goals. The goals of the program were clearly specified in the concept paper. The intention was to demonstrate the linkage of health manpower planning with resource allocation for health manpower education. The funds were to provide a catalyst to institutionalize this linkage among existing *functional elements* in the states. The goals provided the general broad aims and specified a key criterion (institutionalization) by which success would be measured, but there was no specification of objectives and standards to implement the program.

Assumptions. The concept paper defined the elements of the linkage system (planning, resource allocation) and linkage mechanisms, but only in broad terms. Because of the experimental nature of the program no more specification was possible. Although no assumptions were stated, implicit in the discussion was the assumption that *Health Manpower Planning in states was synonomous with CHP Agencies and that Resource Allocation was governed by an organized system*. The scope of work, which was designed to implement the concept principally from the point of view of a planning agency (CHP), also contained assumptions about the status of planning development for health manpower. By specifying tasks aimed at data gathering, planning activities, literature search, and projection methods, the *planning system was presumed to be undeveloped*. Also, very crucial health manpower decisions which were not educational (recruitment, retention, utilization in alternative delivery systems, credentialling) or not financial (program development, quality) were not addressed in the simplified linkage concept presented.

These assumptions were not tested in any substantial way, and thus, individual projects and regional management were left to decide for themselves how their state resource allocation "system" or the whole health manpower decision system was to be "linked" to the "health manpower planning process", and whether the linking was to proceed simultaneously with, before, or after the development of the planning process. With little direction, the projects developed their own concepts. The lack of background investigation and concept specification may not have been too much of a problem for this sort of experimental program, but, as discussed below, the program management was not well suited to capitalize on the experimental nature of the program.

Program Strategy. The apparent Federal strategy was to initiate the program with only the outline of specification, to utilize later evaluations of this demonstration effort to articulate and elaborate the concept, and to determine what works better or worse for future application. By allowing wide latitude in program implementation and project management, the greatest creativity was to be expressed in the development of linkage systems. In keeping with this strategy, two brief studies* were conducted which provided: a) concepts and methods for evaluation and b) a preliminary description and assessment of Linkage Project activities. These two publications helped elaborate the concept, and some of the projects utilized these ideas in their own linkage concept development. The evaluations were limited in their scope and thus were limited in their applicability to the ongoing projects. Because there was little background, meetings were held at several points in the project with sub-groups of linkage states to share their experiences and to discuss common problems and ideas about implementation of the linkage concept. Informal information sharing also helped develop the concept for a number of the projects.

Resources. The initial concept was a $250 thousand contract for a two year scope of work, and most projects operated in the range of $80 thousand to $125 thousand per year. This amount was sufficient to hire technically qualified staff to accomplish planning tasks, while retaining enough to provide incentives for cooperation (i.e., through subcontracts), for public relations activities, etc. The time frame of two years was too short to establish institutionalized mechanisms capable of achieving self support, so many of the projects were extended, some up to four years in total. Even though the last part of the four-year time frame was not generally marked by development of new tangible products, the continuing operational experience at a lower level of expenditure contributed to the institutionalization of linkage mechanisms in some states, where other conditions were favorable. (More of this process will be examined in Chapters 4, 5, and 6).

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*A Methodology for Studying Linkages for Health Manpower Education Planning and Decision-Making, Abt Associates (Final Report), Nov. 1974.

State Linkage Systems for Health Manpower Planning: Some Potential Lessons for Planning Under P.L. 93-641 and P.L. 94-484, Moshman Associates (U.S. Dept. of HEW, Bureau of Health Manpower), January, 1977.

Management Structures and Procedures. The initial concept paper briefly outlined the decentralized management structure of the program. The project officers were to be located in regional offices where selections of contractors were to be made. The central office would approve selections, oversee the program, and coordinate among the regions.

The focus for central office implementation was in the Office of Interdisciplinary Programs, BHM/HRA (the former Office of Special Programs). This office not only issued the first few contracts, but also guided implementation and coordination efforts with the CHSS program and with the old RMP and CHP programs which later became part of HRA. Although the thrust of linkage concepts at the state level might have easily included (and usually did include) programs from the Office of Education (Vocational Education, Higher Education Planning) and from the Department of Labor (Employment Security, CETA), coordination outside of HRA was not emphasized at the Federal level. Conflicting data and program requirements of Federal programs were not resolved at the Federal level, and thus linkages in the states were impeded.

After the program was initiated and the first few awards were made by the central office, the selection, implementation and management functions of the program were decentralized to separate project officers in the regional offices. Except for convening a few meetings and attending others, the central office played a passive role as a central information source and overseer.

Management Standards and Criteria. The concept paper identified criteria for selection of states, and specified the set of tasks to be completed in the course of the project.

The criteria for selection emphasized that the separate elements of the health planning resource allocation system be viable. Specifically, the selection was supposed to consider the viability of the system in terms of the extent of development of a data collection system, the comprehensive health planning capability, and the process of education program budgeting and legislative decision-making for health manpower. In addition, the constraints on the system from professional interests and the workings of the state government were to be considered in the choice.

The criteria were aimed at identifying states which had a high likelihood of success because the component parts of the system were already developed. The criteria were broadly stated so that the regions had wide latitude in their application, i.e., to make the choices and weigh the criteria as they saw fit. For example, in Region VIII the selection of South Dakota was based primarily on two factors. First, a cooperative atmosphere had been established among the relevant actors in an earlier project to develop core curriculum and career ladders for allied health occupations and nurses. Also, even though there was little prior experience with planning and no data system, the state was less complex than others (Colorado, Utah) so that planning was easier to implement. Region I took a less active role in selection by merely issuing the RFP and awarding the contract to Massachusetts based on the quality of the proposal response. As mentioned earlier, Region III already had a similar program operating in Virginia. The national contract was given to Maryland which had the most progressive CHP 'A' agency in the region, and which was therefore best suited for development of Health Manpower Planning. Later, an additional contract was awarded to the Virginia Council of Higher Education to continue its work, so the region had contracts in both a health planning and a higher education setting. Region IX also added a second contract (Arizona) based on interest in the area of Health Manpower Planning expressed by a state university.

The criteria for selection of states were not specified sufficiently to insure that selections met standards favorable to project success or program objectives. In fact, the criteria were not really criteria, but resembled instead a list of items to consider when assessing the capability of the planning system and the financial management capacity of a state to establish linkages. No method was suggested to measure or determine weights (objective or subjective) to be given to the items in order to arrive at a relative ranking. The actual selections in different locations were based on different criteria. *By not specifying measurable criteria within an overall experimental design and by allowing multiple selections with varying, often unknown criteria, a substantial amount of the information value of the program's experimental nature was lost*.

Rather than specifying objectives and standards to be attained, the scope of work outlined a set of tasks to be accomplished. Tasks were aimed at developing basic planning capability and establishing linkage mechanisms. The tasks were fairly concrete and broadly stated to allow flexibility of implementation in different contexts. However, the connection of the tasks to the overall goals and objectives of the project was not made clear in the scope of work or in the concept paper. While accomplishment of the concrete tasks was important to the success of the project, the real aim of the project was the achievement of the more subtle products of collaboration among actors and utilization of planning. In the early stages of the project, the concept was still experimental and could not be elaborated fully enough to give each of the contractual steps a meaning which was closely connected to the real goal.

Many between-the-lines assumptions about how the tasks might fit together into a strategy to achieve ultimate objectives were not made explicit. This was not a problem in the beginning of the experimental program, but rather during the project, especially after the program had been decentralized. Also, no standards were developed to manage the program, and this contributed to its uneven implementation. For example, the first three tasks were : "1) Identify and describe all existing sources of health manpower data..., 2)...identify, review, and document all existing planning activities and documents.., and 3)... research the national data and literature..." These could rightly be seen as part of a strategy to diagnose the current structure of the planning system and to develop concepts to improve the system. With little in the way of broad program concepts and no strategic direction or standards indicated, the interpretation of how contract tasks were to fit together to achieve goals was left primarily to the regional project officer and to the contractor. Too often, project officers with little understanding of planning monitored only the delivery of products, thus missing the between-the-lines meanings.

3.3 Regional Office Program Administration

The implementation of the linkage program through the regional offices expanded and changed the program's focus. After the first three contracts were negotiated in Regions IX, VI, and II, each of the other regions selected a state for the national demonstration, except Region X where Oregon refused a contract because it did not want Federal interference. Regions IV, V and VII not only developed the national scope of work, but also added states out of regional initiative (HMEIA) money. In all, the program expanded from the original idea of 10 to 22 states. As described below, the objectives and approaches taken in the implementation of the program by the regions varied.

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Region VII devoted 95 percent of the regional initiative money to linkage contracts by supplementing the "national" contract to Missouri ($150,000 extra was awarded and more planning tasks were added) and by giving additional contracts to the other states: Nebraska, Kansas, and Iowa. The three regional contracts were a modification of the national scope of work with much greater emphasis on technical planning versus linkage activity. Only a small part of the contract gave mention of a "linkage mechanism", so that these states did not perceive that they had linkage contracts.

Based on a survey of Region V in which the need for coordination was named as the most important problem in health manpower education, the Regional Office offered linkage contracts to all states in the region which had the elements of a viable program. Ohio and Wisconsin received 2 year contracts; Minnesota and Michigan each received one year of funding with an option for a second year; and Illinois and Indiana did not respond. Ohio and Michigan chose to stop after two years, while Minnesota and Wisconsin continued for 3 years with additional money. Region V followed the prototype contract and concept closely. Emphasis was placed on the linkage and implementation aspects of health manpower decisions to the extent that technical plan development was discouraged as a contract activity.

After offering the "national" contract to Kentucky for the full scope of work, Region IV offered each of the other 7 states in the region limited contracts using regional initiative funds. Five projects were eventually funded in Georgia, Mississippi, North Carolina, South Carolina, and Tennessee with an average of $70,000. Florida, which perhaps had the most developed capacity for health manpower planning at that time, did not negotiate a satisfactory contract on time, and Alabama refused a contract because the educational institutions did not want Federal money for manpower planning. The aim of these limited projects was to move closer to a point of rational planning and allocation of resources for health manpower. Although the Regional Office made it clear that it would not pay for data gathering only and that it wanted to develop a planning process with the limited resources available, several projects did use a strong data orientation and attached linkage efforts to the developing CHSS.

The time and resources devoted to program management varied from region to region. For the most part, linkage contracts were few among numerous special projects which were the responsibility of project officers so that only a small fraction of the project officer's time could be spent on each project. Activities consisted of periodic visits and phone calls, but the character of activities generally consisted more of monitoring progress and paper products than of managing the process toward desired outcomes. The limited background in planning possessed by most project officers limited their ability to provide substantive input. Exceptions to this general picture were found in Region VII, where four separate project officers each devoted significant effort to initiate the four projects, and, to some extent, in Regions VI and VIII, where planning guidance aided the projects.

In the absence of a fully-articulated concept of the program which elaborated both the goals and the connections between goals and program steps, the translation of the program from the central office to the regional office and then to the states often blurred the concept. Fulfillment of the specific contract requirements became the goals themselves to the project officer, to the project director or to both; thus, the real goals were lost. This difficulty was overcome only in states where either the state officials or the regional officials or both had a clear idea of the project goals, and the two could agree on those goals. For example, the Arkansas (Region VI) and South Dakota (Region VIII) projects developed concepts with the help of the Regional Office, which were consistent with the overall concept. New Jersey (II), Virginia (III), and Minnesota (V) developed their own objectives which were compatible with the overall concept, while Wisconsin (V) found the regional concept restrictive for its needs. The four Region VII contracts were consistent with state and regional objectives, but diverged from national objectives. Overall, the majority of states with linkage contracts approached the project with concepts that differed significantly from the original idea or that were insufficiently articulated to provide project guidance. Because there was money attached to the term "linkage" and no articulation of its usage, contractors used the term to mean whatever they wanted to do. "Linkages" has thus become a buzz word, lacking practical meaning because it means so many different things to different people around the country. If the purpose of the program was experimental, and the program was not fully specified for this reason, then *decentralized management with little active central guidance and control ran contrary to clarification, development and promotion of the linkage concept.*

Evaluation. Given the limited specification of the linkage concept and strategy and the limited coordination among the multiple project officers, it is impossible to assess the program as a unitary program using standards internal to the program (i.e., the "goals" of the program). An assessment can only be made by using outside standards which are tied to the original goals and by taking into account individual project differences through an analysis of specific goals. From the standpoint of a social experiment, the diversity of objectives and management provides a much larger range of information for analysis, but in the absence of any constants or controls, drawing meaningful inferences from this information is a more difficult task.

To conclude, a lesson can be learned from the implementation of the linkage program. If the intent, as stated in project documents, is to demonstrate an innovative concept so that future evaluation can learn from the experience, then care should be taken to implement the program within the framework of experimental or quasi-experimental design, so that maximum information can be obtained. In the absence of detailed articulation of the concept, two choices are available for program management. First and easiest is central management; second is intense interaction and communication among the separate managers to flesh out the concept into a meaningful program that includes consistent objectives, strategies and standards for management. In both choices, frequent communication, training sessions, written concept papers and technical assistance documents are necessary to communicate the goals and approach, and to implement each state project.

If, on the other hand, the program is fully-developed and well defined in concept with developed performance measures and standards which can alert management to problems, then delegation of the details of program management is appropriate and desirable. Too much central control here can inhibit successful operation of the program. Although the linkage program originally attempted to establish a controlled quasi-experimental demonstration program, the program was decentralized with neither a meaningful set of management criteria nor a mechanism for coordinated implementation.

Chapter 4

EVALUATION OF STATE PLANNING AND LINKAGE SYSTEMS

Chapter 4

EVALUATION OF STATE PLANNING AND LINKAGE SYSTEMS

Based on the evaluation criteria presented in Chapter 2, this chapter assesses the impact of development of planning and linkage systems in the states and the contribution of the Linkage Program to that development. First, the effectiveness of the planning and linkage systems in general is specified in Section 4.1 by identifying those states which have achieved relatively high degrees of planning input to decision-making, integration of decision functions and actors, and capacity development of the decision system. Effective linkage projects are identified in Section 4.2 as those which contributed significantly to effective decision systems in the circumstances of their own objectives and resources. The effectiveness of the linkage program is further analyzed in Section 4.3 by comparison of a group of five linkage states matched with five non-linkage states on significant contextual characteristics.

In this chapter and in the next two chapters, several types of analyses are presented. Descriptive analyses categorize states and linkage projects on key dimensions based on the program and state descriptions, and on the evaluation framework. These categories are the basis for quantitative assessments of decision systems and linkage projects using cross-tabulations and correlational analyses. In addition, qualitative assessments of the efficacy of management factors, strategic factors, and contextual factors are presented to amplify the evaluation of different approaches.

The results presented evaluate some of the most significant factors related to development of planning and linkage systems. However, because of methodological problems in the original design and implementation of the program and because of constraints on the design of the evaluation, there have been limitations on the precision and degree of certainty of the results. As has been discussed in Chapter 3, the design of the linkage program was not conductive to a quasi-experimental evaluation so that some of the important factors are confounded and their effects are not distinguishable. For example, self selection bias makes distinctions difficult between the effect of motivation for linkage projects and the effect of other factors on success of the project. Furthermore, the small sample does not permit partial correlation to control confounding variables. In addition, many variables studied are qualitative and difficult to measure with any degree of precision. Also, the factors studied cannot be directly observed, so reports and opinions of respondents or surrogate indicators are required.

Given these problems, the analysis has cross checked and verified data from several sources to assure reasonable validity. Broad classifications with specified criteria for inclusion have been established to characterize states so that problems of limited validity and measurement error could be accounted for in the conclusions. Results are stated in suggestive terms as hypotheses to be tested by experience and further analyses. In this way, the results and discussion provide useful insights, but within the limits of the data and methods.

4.1 Overall Effectiveness of Planning and Linkage Systems

The evaluation criteria presented in Chapter 2 defined qualitative and quantitative indicators to classify the effectiveness of the linkage network and the decision system of the states. This section specified the overall effectiveness of the planning and linkage systems in states with linkage contracts by identifying: 1) the extent to which the activity of actors is integrated for planning and implementation functions, 2) the extent of planning input to decision-making, and 3) the extent of decision capacity development in the system. The measures and ranks developed in this section will provide a basis for analyzing the factors associated with effective decision system development in subsequent chapters.

4.1.1 Integration of Decision Systems

Chapter 2 defined an effective linkage system as one in which the networks of interaction among the organizations concerned with health manpower integrate the decision-making functions. Here, the planning organizations, educational institutions, professional associations and health providers have a mechanism by which they can coordinate the implementation of decisions about education programs, recruitment programs, credentialling, program accreditation, appropriations, etc. Not only are integrated decisions coordinated by the pooling of resources and information and by the synchronizing of complementary activities, but there is also a stable commitment to the consensus choices.

For example, in New Jersey, a system of advisory committees had been established to coordinate policy and technical inputs to decision-making for health professions education. Over a period of years, the representatives to the policy advisory committee developed a process where the voices of different interests would be heard, and the data and staff analysis (although not methodologically perfect) were accepted as the best information available. In one instance the committee recommended that a cap be placed on enrollments and new nursing programs to avoid a projected oversupply of nurses. Protest by nursing educators led to the establishment of a study committee to consider future roles of nurses. Thus, the decisions were not only upheld, but a mechanism to obtain more information was established.

In its ideal form, integration of decision-making is an enhancement of the process of decision-making because decisions tend to incorporate more comprehensive information over longer periods and include a wider range of values by the participation of those affected by outcomes. An integrated process is also more likely to have a systematic procedure to include a wide range of opinions and information, and to select between conflicting viewpoints.

In a state, the ultimate authority is the legislature, elected as representatives of the public. The forum of the state legislature is where value questions are resolved based on the political power behind each viewpoint. Hence, the legislature is the ultimate location for integration of decision-making. Faced with countless issues, the legislature can only address a fraction of the choices, so that in specialized sub areas, such as health manpower, those actors most directly concerned with implementation of action, such as educators or health planners, can be effective points of integration. Here, a more thorough understanding of the consequences and a more consistent deliberation of the issues can be developed.

In the sample, states fell into three categories in terms of the degree of integration of health manpower decision-making as follows:

Degree of Integration of Decision-Making	States
1. Less Integrated. Neither planning nor implementation activities are substantially coordinated. Commitment to decisions is based primarily on political negotiation and one-shot coalitions of interest.	Arizona Hawaii Georgia North Carolina Massachusetts Mississippi Ohio
2. Coordinated Planning. Some degree of pooling of information and analyses toward decision issues, but little coordination of implementation of decisions based primarily on political motivations.	Maryland Missouri Nebraska South Carolina

3. More Integrated. Implementation activities highly coordinated with commitment to on-going coordination. Some degree of coordination of planning activities.	Arkansas Minnesota New Jersey South Dakota Virginia Wisconsin

It is noteworthy that all the states in the sample with relatively integrated decision-making for health manpower had achieved a high degree of coordination in the implementation tasks. That is, there were mechanisms in place by which choices could be coordinated outside the political forum of the legislature by pertinent influential actors with policy-making authority. In most of these cases, the data gathering and analysis activities were also highly coordinated among the private and state agencies with resources to carry out the planning tasks. There were instances, however, where data gathering or analysis activities were not well coordinated or integrated into the decision system. On the other hand, in states where planning activities were coordinated and implementation activities were not, the depth of commitment to coordination of decisions was sporadic, so that decision-making was not highly integrated. Based on this evidence we can postulate that:

- Coordination of implementation tasks is essential to achievement of integrated decision-making.
- Coordination of planning tasks facilitates the integration of decision-making, but is not essential.

4.1.2 Planning Input to Decision-Making

The integration of planning tasks is intended to improve decision-making by incorporating a wide range of information into the choices taken from different parts of the system, and thus more closely satisfies the current and future objectives and constraints on the decisions. For example, the inclusion of health care providers in policy-making for education of health professionals incorporates information on the kinds of skills required and the number of personnel needed. As seen in the last section, integration of planning tasks or integration of implementation tasks does not necessarily imply that these two tasks will be connected. If planning does improve decision-making, a second indication of an effective decision system is the degree to which planning products actually are considered and incorporated into the implementation process.

Planning input to decision-making is dependent on the degree to which planning products have been developed and mechanisms are available to make use of the products. Planning cannot take place without reliable information and the ability to interpret the information in the light of a particular set of problems and issues. The utilization of planning, on the other hand, implies that there are channels for communication and persuasion. An example of such a channel is where certain points in a routine decision process, such as the approval of a new education program, are designated as times to consult comprehensive plans (higher education plans or health manpower plans).

In the sample of states, three categories in the order of the amount of planning impact on decisions were as follows:

Planning Input to Decision-Making	States
● Low Planning Utilization: Most decisions of any importance are made on the basis of political negotiation largely without reference to data, plans, or analysis produced in the state. Agencies responsible for overall state planning are not consulted prior to choices.	Arizona Georgia Hawaii Mississippi Nebraska Ohio Massachusetts South Carolina
● Medium Planning Utilization: Analysis and data are incorporated into a primarily political process as background information or as support for advocate positions to be attacked by opposing viewpoints.	Maryland Missouri North Carolina Wisconsin

• High Planning Utilization: Systematic incorporation of plans into implementation of decisions. Prior agreement among actors on the merits and limitations of analyses and data. Planning processes are closely tied to decisions such that plans predetermine the course of implementation.	Arkansas Minnesota New Jersey South Dakota Virginia

The degree of planning input to decision-making is highly correlated* with the amount of integration of the decision systems as shown in Figure 4-1. States which have been able to coordinate both planning and implementation tasks have also been able to utilize the planning products that were developed; five or six states with highly integrated systems make use of planning. In these highly integrated states, close connections between health planners (SHPDA, SHCC) and education planners (Board of Higher Education, etc.) facilitate the flow of information about the need and demand for health personnel to provide services and the capability of the state either to educate health professionals or to supply manpower through alternate sources (migration, interstate contracts). The health manpower policy-making which has been coordinated among decision-makers at administrative levels for implementation of programs has pronounced impact on the decisions of the legislature which usually acts to ratify program development, budget allocation, or professional practice choices.

States which only develop planning capability have achieved, at best, moderate utilization of planning. This is probably either due to the lack of mechanisms to use analyses and plans on a systematic basis or due to the lack of comprehensive planning. As was seen in Missouri, without the administrative mechanisms to critically assess the reliability and validity of planning methods and to provide policy guidance as to what

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*The gamma statistic measures the strength of association between ordered variables on a scale from -1 (counter association) to +1 (positive association). For the association between planning input to decision-making and integration of decision-making in "linkage" states, gamma is a very high +.95.

Figure 4-1

DECISION INTEGRATION AND PLAN UTILIZATION

		Integration of Decision-Making		
		Low	Medium	High
PLANNING INPUT TO DECISION-MAKING	LOW	Arizona Georgia Hawaii Ohio Massachusetts Mississippi	South Carolina Nebraska	
	MEDIUM	North Carolina	Maryland Missouri	Wisconsin
	HIGH			Arkansas Minnesota New Jersey South Dakota Virginia

types of analyses and plans are useful, planning products faced an uphill fight to gain credibility necessary to make an impact on the legislative decisions beyond that of any advocate group which had taken a position. Thus, the plans and recommendations in support of a school of optometry only gained attention and influenced decisions to the extent that the coalitions of interests, which benefited from and supported plans, got behind the issue. The plans did not carry an independent weight of their own which is based on more rational analysis, carefully considered judgment and wide consensus of the public welfare. Even though in this moderate utilization of planning situation the plans added weight to arguments of political interest groups, such as the Optometry Society, the real value of planning as an independent force for more deliberate rational analysis to enhance public decision-making was lost. On the other hand, Wisconsin had developed a number of administrative mechanisms to consider various health manpower planning policy issues. Without any comprehensive systematic planning for manpower these policy committees used ad hoc analyses on a case by case basis to support and inform decision-makers.

States which have not been able to coordinate and integrate decision-making on any level have usually not had any significant planning input to decision-making. Six of seven less-integrated states have developed little planning to be used and have left health manpower decisions to independent actors in a laissez-faire system usually dominated by the interests of professional educators. Powerful professional groups in these states have persuaded the legislatures to heavily fund the growth of educational production capacity with minimal regard for the types and numbers of professionals which might be needed. Other than Federal initiatives, less costly approaches to problems of distribution and supply of health manpower receive less attention. North Carolina has been able to develop fairly extensive capability for planning and analysis of health manpower problems in several sectors of the state. These separate thrusts have helped develop a more long-run perspective on the solution of problems, but these efforts have not been brought together to establish a comprehensive statewide perspective.

One of the fundamental assumptions behind the concept of development of planning and linkage systems is that the wider range of input and careful rational analyses of problems and consequences of actions will result in more effective decision-making outcomes -- more effective production and utilization of health manpower, better health care delivery and better health. Thus, planning input to decision-making means a better decision system. With this in mind and based on the data presented we can postulate that:

- A higher degree of integration of decision-making tasks and actors for both planning and implementation tasks results in greater planning input to decision-making and a more effective decision system.

4.1.3 Decision-Making Capacity Development

Up to this point, we have discussed the qualitative factors associated with effectiveness of planning and linkage systems, and hence the effectiveness of the implementation sub-system and the entire decision-making system. Now, to turn to a quantitative assessment of the extent of development of the system, the types of tasks developed for planning and implementation of health manpower decisions are assessed. A sample of 23 types of planning and implementation products relevant for health manpower decisions has been presented in Chapter 2, (p. 30). The number of product types developed at any point in time indicates the extent of system development. Furthermore, when analyzed in terms of the effectiveness of the decision system (integrated decision-making, planning input to decisions), a closer examination of those areas developed and those undeveloped provides a useful diagnosis of the effectiveness of the development strategy.

Decision-making tasks can be developed to the extent that there is widespread activity in the task area over the relevant types of decisions and manpower categories, or the task can be developed such that it is partially operational or covers only a limited scope of the system. For example, a comprehensive health manpower plan might have been developed to assess future choices facing the system, or a nursing plan may have been developed to direct actions in the more limited area of nursing. For purposes of analysis, the states were ranked in terms of the number of well-developed tasks and the number of partially developed tasks at the time of this study (1978). Based on the distribution of numbers of task areas developed, the rankings have been grouped* into three categories which correspond to the ordinal classification on the other 2 measures of effectiveness as follows:

Decision-Making Capacity Development	States
• Low Capacity: of 23 tasks, less than 11 tasks developed substantially or less than 17 developed at least partially.	Georgia Hawaii Massachusetts Mississippi North Carolina Ohio
• Moderate Capacity: of 23 tasks, at least 11 developed substantially and 17 developed at least partially.	Arizona Maryland Minnesota Missouri Nebraska South Carolina

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*Grouping the sample in this way reduces the chance of measurement error in the analysis due to limited reliability of this information. Such a grouping places a limitation on the degree of precision with which inferences can be drawn from the data, but this limitation is in keeping with the type of variables studied and the limitations on data gathering for this evaluation. The conclusions to be drawn therefore reflect these methodological constraints.

Decision-Making Capacity Development	State
● High Capacity: Out of 23 tasks, at least 15 tasks developed substantially and 19 developed at least partially.	Arizona New Jersey South Dakota Virginia Wisconsin

Decision-making capacity development is strongly associated with the previous two measures of effectiveness of the system as shown in Figure 4-2. The strong intercorrelation of the three measures supports the internal validity of the concept of an effective process of decision-making for health manpower which takes into account the number of tasks being performed, the coordination and intergration of actors performing the tasks, and the connection of intelligent planning tasks to the implementation tasks.

Figure 4-2

INTERCORRELATION OF MEASURES OF EFFECTIVENESS

	Integration	Planning	Capacity
Integration of Decision-Making	--	.95	1.00
Planning Input to Decision-Making	--	--	.89
Decision-Making Capacity Development	--	--	--

Measure of Association: Gamma (see Blalock, Social Statistics, 1972, p. 421)

4.1.4 Diagnosis of Effective Decision Systems

A complete ranking of effective decision-making processes for health manpower is the average ranking on all three separate measures as follows:

Most Effective	Medium Effectiveness	Least Effective
Arkansas	Maryland	Arizona
Minnesota	Missouri	Georgia
New Jersey	Nebraska	Hawaii
South Dakota	South Carolina	Massachusetts
Virginia		Mississippi
Wisconsin		North Carolina
		Ohio

The overall ranking of the states on the extent of capacity development and the other measures of effectiveness only reveals a general picture of the decision system. Examination of the extent of development for different major categories of decision-making tasks shows a more refined picture of the developments, and yields insights into the appropriateness of the strategies for development which will be analyzed in Chapter 6. Throughout this evaluation, the seven decision functions have been divided into two categories, four planning functions and three implementation functions. Because of the emphasis given to data gathering activities, which are conducted in health statistics organizations separate from other planning tasks, data is a third category of development tasks used here to assess more precisely the type of development of the system. Figure 4-3 displays the number task areas developed in each state for each of the three categories.

An understanding of the effect of different types of developments on overall effectiveness can be inferred from analysis of the relation between the extent of development of each

Figure 4-3

EXTENT OF CAPACITY DEVELOPMENT AND SYSTEM EFFECTIVENESS

State	Capacity Development (number of tasks developed and rank)				Effectiveness Ranking		
	Data (of 4)	Analysis & Planning (of 10)	Administrative Processes for Implmntn (of 9)	Total (Developed/Partial)	Integration of Decisions	Planning Utiliztn	System Effectiveness
Arizona	4 (H)	5	4	13/4	L	L	L
Arkansas	4 (H)	9 (H)	5 (H)	18/3	H	H	H
Georgia	1	4	2	7/6	L	L	L
Hawaii	2	3	4	9/3	L	L	L
Maryland	2	7 (H)	5 (H)	14/4	M	M	M
Massachusetts	4 (H)	3	4	11/4	L	L	L
Minnesota	4 (H)	4	5 (H)	13/5	H	H	M
Mississippii	2	1	2	5/4	L	L	L
Missouri	4 (H)	7 (H)	3	14/4	M	M	M
Nebraska	3	9 (H)	3	15/2	M	L	M
New Jersey	4 (H)	8 (H)	5 (H)	17/4	H	H	H
N. Carolina	4 (H)	4	3	11/4	L	M	L
Ohio	2	5	4	11/0	L	L	L
S. Dakota	3	10 (H)	6 (H)	19/1	H	H	H
S. Carolina	4 (H)	4	3	11/9	M	L	M
Virginia	4 (H)	8 (H)	5 (H)	17/3	H	H	H
Wisconsin	4 (H)	5	5 (H)	16/3	H	M	H

Ranks: H=High, M=Medium, L=Low

category (data, planning, implementation mechanisms) and the measures of system effectiveness (capacity development, integration of decision-making, planning utilization and overall effectiveness), which are also shown in Figure 4-3. In eight states, the development in each category is the same as the overall measure. Three (Arkansas, New Jersey, Virginia) of the six most effective decision systems are also relatively high in all three categories, while four (Georgia, Hawaii, Mississippi, Ohio) of six least effective systems are also relatively low in each category.

For those states in the intermediate range, a pattern in the types of development in the systems which are more successful appears to emerge. Three (Minnesota, South Dakota, Wisconsin) of the four other states with the highest amount of development of implementation mechanisms are among the most effective state decision systems (the fourth, Maryland, is medium effectiveness), and all of the six most effective systems have high development of implementation mechanisms. On the other hand, of the other six states (Arizona, Massachusetts, Missouri, Nebraska, North Carolina, South Carolina) which have at least one of planning and development in the highest category, but do not have the highest administrative implementation development, four are medium effectiveness and two are less effective. Although the evidence is sketchy at this point and more confirmation is needed, we can venture the following postulate (a postulate in a similar vein as the one in Section 4.1.1).

- Effective decision systems require a high degree of development of administrative processes for implementation of decisions and at least a moderate degree of development of data and planning.
- A high degree of development of technical planning tasks without development of administrative implementation mechanisms will not result in an effective decision system.

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Building on the postulate above and on the framework for evaluating planning and linkage systems, the 23 types of planning and implementation products begin to define elements of a diagnostic tool to identify problem areas in the development of the decision system. To use the list of product areas as a diagnostic tool, planners or decision-makers in any part of the system can undertake a self-study analysis to determine precisely which of the planning and implementation tasks have been developed. Then, an analysis can be conducted of the leverage (resources, skills, legitimacy) which is available in the system to develop tasks not already developed or to strengthen ones that are partially developed. Afterwards, a strategy can be formulated to fill in the gaps. The strategy should take into account that developing planning techniques without a clear mechanism to utilize those techniques is probably a less desirable course of action than developing mechanisms to process and coordinate the implementation of decisions (e.g. advisory committees, coordinating councils to be described in Chapter 6). On the other hand, developing implementation mechanisms without the backup of data and analytical input to identify problems and to assess alternative solutions can also undermine the effectiveness of decision-making. Thus, planning development should take place simultaneously with implementation development and under the guidance of the decision-makers in the system.

For example, Minnesota has developed a well-coordinated, elaborate system of planning committees to arrive at recommendations for government-sponsored administrative decision mechanisms. The administrative boards have authority on a wide range of decisions, including education program development, budget allocation and health manpower credentialling. Examination of the development of decision tasks in the system reveals, however, that comprehensive planning is limited, analytic capability to support the planning mechanisms is lacking, and reliable, consistent data are not always available. Some of the influential decision-makers on committees have reduced their participation because there is insufficient staff support to grapple with complex problems, such as the persistence of maldistribution despite increased production of manpower and impending surpluses. Also, a crisis orientation toward the consideration of issues is prevalent. In this situation, the already highly effective decision system can reduce the risk of losing what has been established by devoting its energy to identification of resources and to steps that fill in analytic gaps, develop comprehensive plans and thus reduce the crisis orientation.

4.2 Linkage Project Effectiveness

The Linkage Program was designed to help states formulate and demonstrate strategies to develop their health manpower planning and decision system. Projects were conducted in states with different histories and contexts, and different objectives and resources to develop their systems. While the last section analyzed the end point of the development process to evaluate the overall effectiveness of the state decision system, this section takes a more microscopic view of the development process to analyze the success of specific linkage project strategies.

After describing briefly the range of goals and resources, three indicators of project success will be analyzed. In order to account for the different starting points of decision system development in states, the change in capacity associated with the linkage project will be analyzed. Then, the different levels of resources will be controlled by comparing the capacity development at different funding levels for projects. Also, analysis of the institutionalization of the planning and linkage effort will extend the evaluation to outcomes beyond the end of Federal funding.

State Goals. The goals and objectives of individual linkage projects varied from state to state. Four major emphases have been identified in the state goals of the projects: 1) coordination of health manpower policy decision-makers; 2) coordination of efforts to plan for health manpower; 3) development of planning methods or data as inputs to planning or decision-making; and 4) establishment of the groundwork for planning or coordination (e.g., identifying data sources or decision-makers, developing organizational plans). States have focused on one or more of these objectives as shown in Figure 4-4.

Although the national scope of work emphasized development of groundwork, and the coordination of planning and decision-making, individual states varied in their approach due to different emphases in regional management of the program and different amounts of prior development in the state. In Region IV, several contracts with limited resources ($48,000 to $100,000) and modified scopes of work attempted to develop background material for health manpower planning. One state (South Carolina) took an additional step to develop data and organizational mechanisms to coordinate planning inputs. The states in Region VII had a greater amount of resources than those in Region IV ($225,000 to $400,000), but both the state goals and the modified contracts emphasized the development of a plan for health manpower rather than the development of linkages to decision-making. Region V also went beyond the national demonstration to include several other states, but this region emphasized efforts to coordinate decision-makers and planners, and restricted the development of the technical aspects of planning. Other regions followed the national scope of work, but states set their own goals. Most emphasized the coordination of decision-makers, but many put major effort into the more technical aspects of planning (some of these already had a decision system and needed planning input).

Figure 4-4

GOALS AND OBJECTIVES OF LINKAGE PROJECTS

REGION	STATE	CONTRACT TYPE	MAJOR OBJECTIVES
I	Massachusetts	Std	Coordinate relations among 3 cabinet level agencies (Human Service, Manpower, Education) Specifically, develop data system, manpower projections and program inventories respectively (1,3) .
II	New Jersey	Std	Develop and coordinate manpower projections, plans, and program approval mechanism (1,2,3) .
III	Maryland	Std	Develop and institutionalize health manpower planning process and linkage system to implement plans (1,2).
	Virginia	Mod	In the context of established planning and policy committees, develop methods to determine manpower needs and develop data and information systems (3).
IV	Georgia	Std	Identify data sources and develop foundations for more permanent linkages among relevant actors (4) .
	Mississippi	Mod	Determine feasibility of establishing planning and linkage system for health manpower (identify data and planning resources) (4).
	North Carolina	Mod	Assess potential for health manpower planning and develop organizational structure for planning (4).
	South Carolina (Not studied: Tennessee and Kentucky)	Mod	Establish data base, coordinate education and health service data and coordinate planning input to policy-making (3,4) .
V	Minnesota	Std	Develop coordinated process to include all parties in decision-making. Develop data and analysis to back-up decision-making (1,3) .
	Wisconsin	Std	Develop coordination among resource allocation, health planning and educational decision-making and improve utilization of planning inputs (1,3) .
	Ohio (Not studied: Michigan)	Std	Develop coordination between allocation and planning. Develop health manpower planning capability (1,3) .

Figure 4-4 continued

REGION	STATE	CONTRACT TYPE	MAJOR OBJECTIVES
VI	Arkansas	Std	Coordinate and plan among users, producers, and interest groups concerned with health manpower (1,2,3) .
VII	Mississippi	Std	Develop high quality data for decision-makers, identify problems and develop plans for health manpower (2,3,4) .
	Nebraska	Mod	Develop health manpower plans, measure shortage areas, establish priorities and strategies to meet needs (2,3,4) .
(Not studied: Iowa and Kansas)			
VIII	South Dakota	Mod	Develop health manpower plan; coordinate planning and decision-making to implement plan (1,2,3) .
IX	Hawaii	Std	Initially, develop health manpower planning system; changed to demonstration of planning techniques (2,3) .
	Arizona	Mod	Develop mechanisms to determine health manpower needs; develop data systems for health manpower (3) .
X	(none)		

Numbers in parentheses refer to categories of objectives as follows: 1) Decision-making coordination, 2) Planning coordination; 3) Data and planning methods, and 4) Groundwork for planning and decision system development.

Capacity Development. With such a variety of objectives and resources, comparative assessment of project effectiveness is a complex task. Since the idea behind the linkage program was development of planning and implementation decision capacity, one measure of success is the *change* in capacity in the system, no matter what the major objective of the capacity development might have been. By measuring the overall change in capacity, differences in the starting point and objectives are taken into account. Two measures of capacity change are possible: 1) the proportion of products developed (see p. 30 for products) which are directly attributable to resource expenditures of the linkage project, and 2) the proportion of capacity changes in the coordinated network associated with the linkage project. Here, the coordinated network is defined as the set of organizations with an institutionalized relationship with the linkage contract agency. By counting decision products and functions developed not only in the contracting agency but also in closely associated agencies, the second measure is in line with the spirit of the term "linkage" not to duplicate efforts. Successful linkage projects thus not only develop their own decision products, but promote and coordinate with the development of products outside. For example, the development of needs assessment methods for manpower in health services might be carried out by the SHPDA, while the needs assessment methods for education programs are conducted by the Higher Education Board. A linkage project in either location is more successful if it promotes or links to development efforts in the other location.

Using change in capacity as a measure, states gained from 2 to 14 functions (of 23) in their health manpower decision system. As shown in Figure 4-5, in most of the linkage states, the majority of health manpower decision-making capacity developments are attributable to the coordinated network of linkage activities. In only a few states were there significant

Figure 4-5

MEASURES OF SUCCESS OF LINKAGE PROJECTS

State	Capacity Development (# of Tasks Developed in Network/Total # Developed)	Project Resources (1,000's)	Capacity Change Relative to Resources	Institu-tionaliztn. (yes or no)	Average Ranking (Sum of three ranks)
Arizona	4/9 (L)	185	M	no	L
Arkansas	6/6 (M)	240	M	yes	M
Georgia	7/9 (M)	140	H	no	M
Hawaii	4/5 (L)	319	L	no	L
Maryland	13/13(H)	325	H	yes	H
Massachusetts	6/7 (M)	250	M	no	M
Minnesota	12/12(H)	375	M	yes	H
Mississippi	3/5 (L)	60	M	no	L
Missouri	14/14(H)	360	M	no	M
Nebraska	4/4 (L)	400	L	no	L
New Jersey	10/10(H)	450	M	yes	H
No. Carolina	4/10(L)	48	M	no	L
Ohio	2/2 (L)	213	M	no	L
So. Carolina	8/8 (M)	184	H	yes	H
So. Dakota	10/10(H)	350	M	yes	H
Virginia	9/10(M)	380	L	yes	M
Wisconsin	12/12(H)	275	H	yes	H

Ranks: H = High, M = Medium, L = Low.

developments outside the linkage system. Several projects were able to develop more capability in their systems than were others. Projects are grouped into high (H), medium (M) and low (L) classifications in Figure 4-5.

Resource Levels. Linkage projects operated at different levels of resources shown in Figure 4-5. The significant correlation (Spearman rank order correlation = .54, significant with probability greater than 95%) between the level of resources and the number of tasks developed indicates that the amount of resources available did effect the ability of the projects to develop decision capacity. To control for the resource level, both projects and resources are grouped into high, medium, and low categories; each state is compared on the two dimensions to give an idea whether the project performed relatively well with respect to its resources. For example, South Carolina developed eight functions with a total of $184 thousand; it was ranked medium on the capacity development dimension and low on the resource dimension, so it performed relatively well. Figure 4-5 ranks all states using this rough measure.

A problem in this measure is exemplified by the case of Virginia which had a high resource expenditure and only medium capacity development. The Virginia project devoted resources to refinement of decision-making functions which had been initiated by a previous effort to enhance health manpower planning. Thus, although the overall system was highly developed, the project did not perform well on this measure. As will be described more in Chapter 6, Virginia was off the end of the scale on the capacity development dimension so the measure may not be accurate in this case. However, since most of the states had only a few of the functions developed prior to the project, this capacity scale is an accurate assessment of their first steps toward development of a health manpower system.

Institutionalization. A third measure of effectiveness of the linkage project takes into account the quality of development efforts rather than the quantity of developments. The institutionalization of efforts to conduct planning and linkage activities for health manpower describes the degree of continuity and on-going commitment in the state to linkage project goals. This measure goes beyond the one shot intervention of Federal funding and beyond the development of specific tangible products to reflect the less tangible products of developing appropriate organizational relationships to establish a viable role for health manpower planning in the state. As was described for Virginia, this measure takes into account the project resources devoted to keeping the established mechanism in operation in order to demonstrate its effectiveness after basic techniques have been developed. Figure 4-5 lists the classification of states on this measure. Altogether, eight of the seventeen states institutionalized efforts to some extent.

Project Effectiveness. A ranking of the overall success of states based on the amount of capacity change in the decision system, the capacity relative to resources used by the projects, and the institutionalization of linkage efforts is shown in Figure 4-5. States with at least two factors among the highest or lowest are ranked high or low respectively; others are ranked medium.

The average measures of effectiveness for projects correspond closely to the overall rankings of effectiveness of state decision systems (10 of the 17 are ranked the same for the state system and the project; gamma = .84). Thus, as expected, the success of individual projects was tied to the ultimate effectiveness of the decision system. However, given the way the program was implemented at the Federal level (see Chapter 3), it is difficult to attribute the effectiveness of a state decision system to the success of individual projects based on this relationship. It appears that several factors were working simultaneously. First, many states were selected as those most conducive to development of linkages. Also, the states which were most successful initially were given more resources and more time to develop, refine and institutionalize their systems. Although there were few exceptions to the above description, the result has been a pronounced segregation of states which had relative success on most measures from those which had very little success.

Because of the confounding of information, the data on project effectiveness give limited information to assess overall program impact. On the positive side, substantial gains in the capacity of the decision system (number of decision functions and products) are exhibited, depending on the amount of resources allocated. These capacity gains are mostly (90%) connected to the coordinated network of actors concerned directly with health manpower in states. On the other hand, only eight of seventeen states institutionalized their system development efforts. These eight were mostly the ones which had more resources and time to develop a critical mass or threshhold level of decision-making capacity to sustain an on-going decision system. Because the most effective states were the ones selected and nurtured, it is not likely that others would have done as well even with more resources and time. In conclusion, the linkage program was associated with significant improvement in the states' decision systems, but the improvement was sustained in slightly less than half of the sample states.

The linkage program did not take place in isolation from other developments affecting the health manpower decision system. The implementation of health planning, higher education planning, health manpower statistics, and other factors all greatly influenced the goals of linkage projects. The improvements seen in the decision system capacity might be due to factors other than the linkage program. In order to control for these outside developments, the next section compares a sample of linkage states with matched non-linkage states.

4.3 Analysis of Selected Linkage Versus Non-Linkage States

In order to evaluate the relative impact that the linkage projects had on their manpower decision systems compared to concurrent developments which were occurring in the decision systems, a comparison of the state context, linkage mechanisms and outputs of the decision system was conducted between a sample of linkage and matched non-linkage states.

4.3.1 Selection of Matched Pairs of States

Linkage states were matched with non-linkage states based on five contextual variables significant to health manpower planning in the states. Three of the variables describe the general state context for health manpower. Based on a study by the Advisory Committee on Intergovernmental Relations*, the *fiscal capacity* describes the relative tax burden on the state and its growth or decline. *Manpower supply* indicates the relative ratio of physicians and nurses to the population of the state and *production capacity* indicates the relative output of nursing and physician students to meet manpower requirements. Two variables describe the existence of planning capacity in the state in areas important to health manpower. The existence of a CHSS manpower component describes the background *statistics* available for planning. Location of *Higher Education Planning Commissions* within coordinating boards or governing boards indicates the degree of administrative authority available to implement planning.

As is described in detail in the appendix (Research Methods), each linkage and non-linkage state was arrayed on the site selection variables, and pairs of states which matched on the variables were selected to represent as broad a range of the contextual characteristics as possible.

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* "Measuring Fiscal 'Blood Pressure' of the States -- 1964-1974," ACIR, February, 1977.

Linkage States	Matched Non-linkage States
Arizona	Maine
Arkansas	Oklahoma
Maryland	Illinois
New Jersey	Connecticut
North Carolina	Florida

The distribution of the matched pairs on the variables was as follows:

- *fiscal capacity*: three of the five linkage states and their matches were classified as being high and rising. Two linkage states and their matches were low and falling.
- *production capacity for MDs and RNs*: Two of the linkage states and their matches had high production of both physicians and nurses. Two pairs of states were low in production of both occupations. One pair was high in nurses, low in physicians.
- *supply of MDs and RNs*: Two pairs of states were low in supply of both professions. One pair was high in supply of both professions. One pair was low in physician supply, high in nurses and the remaining pair was high in physician supply, low in nursing.
- *type of governance for education*: three pairs of states had coordinating councils while two pairs of states had governing boards,
- *existence of a CHSS system*: two pairs of states had a CHSS system. Two pairs did not. The fifth pair did not match on this variable (the linkage state possessed a CHSS contract whereas its match did not).

4.3.2 Contextual Factors in Linkage vs. Non-Linkage States

The linkage states and their matched counterparts were selected so that they represented a cross-section of all states in terms of their health manpower context and planning capacity. This section discusses the success of this matching process and determines if there were any additional contextual variables which affected the development of linking mechanisms in linkage versus non-linkage states.

One of the major factors which appeared to foster the development of individual linkage mechanisms was the perception by high level policy makers (i.e. Governor and the Legislature) that a specific manpower issue was of major public concern. Examples of these issues would be the establishment of a new health professions education center (as was the case in Maine) or the attempt to address a critical maldistribution problem (such as the need for rural providers in North Carolina). However, the individual linking mechanisms which resulted from these crisis-type issues did not lead to greater linkage network development. Very rarely did ad hoc, hastily formed, task forces remain viable mechanisms to sustain coordination between agencies and sectors. As an example, in Connecticut, a task force was convened of representatives from LPN, ADN, and RN nurse training programs, religious and secular hospitals, various nursing associations, and a host of other nursing-related organizations to deal with the immediate problem of making decisions on career articulation. The task force met, debated and made recommendations, but it quickly disbanded leaving a vacuum for the next nursing issue to be discussed without a formal mechanism. This scenario occurred both in states which had linkage contracts, and in those which did not. To summarize, linkage network development did not evolve to be institutionalized or comprehensive as a result of responses to issue-specific crises.

The states which attempted to form more permanent linkage networks and which were characterized by a strong sense of commitment to the process of linkage were not necessarily those where manpower was a burning public issue. Instead, states which were motivated to develop more institutionalized linkages were those which had a longer history of generalized manpower problems. In these states, the manpower issues were familiar to the agencies and actors in the decision system. In states such as Arkansas, Oklahoma, Maryland, and Illinois, there had been a moderate amount of informal interaction between sectors via weak linkage devices. During the period of the linkage contracts (1974-77), these four states attempted to build on these preliminary foundations. Arkansas and Maryland were linkage states, while Oklahoma and Illinois were not, but in all four states, there were more comprehensive efforts to attain inputs into the planning process and greater integration of decision making.

None of the remaining three non-linkage states (Maine, Connecticut and Florida) attempted to pursue development of permanent mechanisms or networks. The manpower contexts of these states were generally characterized by no leadership or motivation to reach interagency coordination on a broad basis. These states did not show concern for linkages to address chronic, generic manpower problems, although all of them had possessed some kind of linkage mechanisms directed at specific issues. All of the states had brief experiences with health manpower planning prior to 1974, but these dissolved around the time that linkage projects were beginning to grow.

The counterpart linkage states of the three above-mentioned states had similar pre-linkage contexts in that there was relatively little informal, statewide interagency contact. However, Arizona, New Jersey and North Carolina all attempted to make the heroic leap from having no basis for comprehensive linking to having a major coordination network. As we observed in earlier sections, the results were mixed.

To summarize, there appeared to be no major contextual factors which may have accounted for differences between linkage and non-linkage states. The pre-selection criteria appear to have been successful in pairing linkage and non-linkage states.

4.3.3 Comparison of Strategies and Mechanisms

This section compares the priorities, strategies, and types of linkage mechanisms which arose in linkage and non-linkage states.

Priority. In general, the five *linkage states possessed a greater awareness and consciousness of the need for health manpower planning and decision-making coordination than did the five non-linkage states*. The decision to take on a linkage contract evidenced state agency concern for manpower planning, which was relatively high in all but one (North Carolina) of the five linkage states. On the other hand, manpower planning was considered to be of major concern in only one (Oklahoma) non-linkage state agency setting and was of minimal importance in three states (Florida, Connecticut and Maine).

Part of the explanation for the lack of interest in the non-linkage state health planning and health occupations education agencies was that some initiatives in health manpower coordination had occurred prior to the time period when linkage contracts were awarded. For example, in Connecticut, a statewide health manpower institute operated for several years and developed inventories and analyses of allied health manpower training and utilization. In Florida, health manpower was a relatively high priority of the comprehensive health planning agencies.

Strategy. The organizational strategy for linking activities was relatively similar in the linkage states. *All of the linkage states intended to improve coordination through a centralized body*. The substantive functions of the linkage projects varied in terms of emphasis on data, planning or decision-coordination, but structually, all of the linkage projects conceptualized their efforts to originate from a central advisory committee or central administrative structure. As examples, Arizona and North Carolina directed a great deal of their efforts to data development activities. These two linkage projects felt less confident about their ability to alter decision-making in their manpower environment, so they turned to a more technically-oriented approach to linkage. Nevertheless, both projects intended to rely heavily on their central advisory boards. States which emphasized decision and planning coordination, such as New Jersey and Arkansas, clearly had a different substantive focus than the data-oriented states, but these linkage projects also intended to use their advisory boards to provide a statewide orientation to the linkage effort. In contrast, all of the non-linkage states (except for Oklahoma) lacked any agency or advisory group which assumed an overseeing role. As a result, many manpower efforts generated in the non-linkage states never were aimed at having broad policy impacts.

Many of the linkage projects were located in either the state health planning agency or in the higher education board or coordinating council. In contrast, the major linkage mechanisms for the non-linkage states were often less closely identified with state government responsibility. In Connecticut, an independent corporation to study allied health manpower planning was set up as a linking device. In Maine, the RMP took a great deal of the leadership in linking functions. In Oklahoma, an interagency task force for health manpower data was set up voluntarily by both government and private provider organizations. The structural location of many linkage mechanisms outside of the state agencies in non-linkage states made formalization and institutionalization a more difficult task. In non-linkage states, there was a distinct separation of boundaries between governmental activities and functions pursued by independent organizations. In the linkage states, the linkage projects generally provided stronger ties between state agencies and independently based manpower coordination mechanisms.

To summarize this set of findings, the strategy of locating linkage projects within a state health planning or educational agency produced a centralizing orientation to the development of linkage networks. With major responsibility for manpower planning, the *linkage state agencies saw their role as one which encompassed the entire state's decision system rather than one sector or smaller network of actors*.

Location. It is difficult to draw any conclusions regarding whether the choice of state health planning versus higher education board was more appropriate from the linkage versus non-linkage comparison. Of the five linkage states, three projects were located in the SHPDA, one was in the higher education board and the fifth was divided between the SHPDA and a university based effort. Of the non-linkage states, higher education was dominant in one state (Illinois), the state health planning agency took a lead role in two states (Oklahoma and Florida), and independent agencies predominated in the remaining two states (Maine and Connecticut). No real pattern emerged which indicated that linkage development was better served in one setting versus another.

Coordination Mechanisms. As mentioned earlier, the broader, more centralized nature of the mechanisms in linkage states led to greater emphasis on coordinative tasks. Arkansas placed high priority on mechanisms such as the Governor's Conference on Health Manpower Planning which brought together virtually all of the major health manpower planners. New Jersey's Health Professions Education Advisory Council was the single most important linking mechanism in the state and was a comprehensive, well institutionalized mechanism which developed planning and program review recommendations.

Maryland's Interagency Health Manpower Advisory Group, while a less potent and influential body than its counterparts in New Jersey and Arkansas, still emphasized its responsibility to coordinate the policy making of the educational sector with the provider sector and in linking public agencies with private actors. Arizona's linkage project formed a similar coordinating advisory group, but this dissolved with the end of the contract. Only North Carolina failed to establish some kind of interagency coordinating body.

In contrast, there were fewer such coordinative mechanisms in non-linkage states. Formalized policy coordination mechanisms which linked agencies and actors across sectors were totally absent in Connecticut and Florida and only partially present in Illinois and Maine. Only Oklahoma possessed an ongoing interagency task force which served to bring together policy makers. Oklahoma's statewide linkages appeared both in the aforementioned Governor's Conference and in the Oklahoma Council for Health Careers which regularly linked providers, employment agencies and planners.

The fact that non-linkage states tended to lack mechanisms which fostered coordination of planning tasks is most strongly illustrated by the comparison between New Jersey and Connecticut. In New Jersey, the Health Professions Edcuation Advisory Council brought together representatives from all major segments of the health occupations education sector and a number of health delivery actors, and has a committee structure of substantial scope. This cross-cutting coordinating mechanisms had its structure copied by several other linkage mechanisms in that state, such as the Advisory Council on Graduate Medical Education. On the other hand, Connecticut relied on much more informal devices to tie its sectors together. When an issue such as planning for nursing education arose, ad hoc study committees would be formed. Many such ephemeral mechanisms have led to an atmosphere where each becomes increasingly meaningless. Several participants felt that these efforts lacked direction and failed to have lasting impact on coordination of planning. While this is an extreme contrast, the linkage states did possess a distinct tendency to have more formalized, intense and institutionalized planning coordination mechanisms.

Coordination of implementation tasks was not as distinctly favored in linkage states because this was relatively low in most states whether they had contracts or not. Relatively few mechanisms, even in the most highly linked states, were intended to have major impact on the decision system.

Linkage mechanisms rarely reached into the political arena (Arkansas had a legislator on its advisory group and New Jersey had impact on this area, but these were exceptions). The most ambitious mechanisms, such as those in Arkansas, sought to improve the existing planning systems rather than directly seek out decision systems. The Arkansas linkage project succeeded in tying itself to state health policy making by winning acceptance from the SHCC as the designated organization which was responsible for a state health manpower plan. By obtaining planning credibility, the linkage project hoped to impact on whatever implementation role the SHCC might be able to obtain.

In both linkage and non-linkage states, data related linkages were important mechanisms. In all of the linkage states, data linkages were of high priority. In fact, the linkage project in North Carolina saw its only function to be an adjunct to that state's CHSS manpower component. Three of the non-linkage states (Connecticut, Illinois and Oklahoma) did not possess CHSS contracts, yet in all states but Connecticut, there were serious efforts to improve health manpower data collection. Data linkages have provided an avenue for improved linking in several non-linkage states which have relatively low network development. In Florida, the SHPDA uses its CHSS system to interact with users in many settings where motivation to communicate would otherwise be absent. Since every type of provider and educational actor in Maine contributes or uses the data system in some manner, data efforts provide the most comprehensive and balanced mechanism in the state. The one state which did not have major data linkage mechanisms, Connecticut (a non-linkage state), tended to de-emphasize development of planning products. Here, the lack of a major data linkage has clearly hampered the level of participation in terms of comprehensiveness and intensity of interaction.

4.3.4 Analysis of Planning and Linkage Development

In this section, the effectiveness of the linkage networks in linkage versus non-linkage states is compared using the framework of Chapter 2.

Integration of Decision Systems. In this sample, the linkage and non-linkage states are categorized according to degree of integration of health manpower decision systems as follows:

	Linkage States	Non-Linkage States
Less Integrated	Arizona North Carolina	Connecticut Florida Maine
Coordinated Planning	Maryland	Illinois
More Integrated	Arkansas New Jersey	Oklahoma

One can see that the matched linkage states are broadly representative of the distribution of all linkage states on this dimension. Most of the linkage states did not rate higher or lower than their matched counterparts in terms of overall decision system integration. The exception is that New Jersey was ranked considerably higher than was Connecticut. This finding underlies the importance which the contextual factors have for linkage development.

Analysis of the coordination and commitment of individual states indicates that the presence of a linkage program instigated improvements in the decision systems above what might otherwise have been developed. The non-linkage states which de-emphasized implementation tasks achieved low levels of coordination. Connecticut, Florida and Maine all were states which did not attempt to develop mechanisms to improve interagency, intersector communications, with the result that informal mechanisms were unable to compensate for the lack of integrative task implementation. This verifies the finding of Section 4.1.1 which indicates that coordination of implementation tasks is essential to integration. The fact that Florida and Maine

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were quite active in the realm of development of planning inputs (such as data collection and analytic studies) did not improve their ability to integrate decision-making. The broader coordination seen in linkage states did prove to enhance integration in those states.

In order to better understand how the linkage states were more integrated than the non-linkage states, we need to discuss the structure and process descriptors of decision task development (see Section 2.3.2).

Consolidation. The decision structure in linkage states was slightly better consolidated than non-linkage states. Of the linkage states, Arizona and North Carolina were fragmented and dispersed in terms of decision making tasks. Of the non-linkage states, only Oklahoma could be considered a state where tasks were combined into any form of unified structure. Arkansas and New Jersey were also states which possessed a high degree of consolidation.

Complexity. Complexity of the decision system appeared to be a function of both size of the state and commitment to development of a major linkage mechanism. The linkage states were, on average, less complex and had more commitment to the development of mechanisms. Illinois, Florida and Connecticut had relatively complex systems which undercut the ability of the state to achieve integration. Yet in Arizona and North Carolina, the complexity of the system was low, but the failure to stress coordination tasks in the linkages also led to poorer integration. New Jersey and Maryland which have complex decision systems, had the commitment to develop a linkage network which could address the complexity in an adequate fashion.

Collaboration. Collaboration characterizes the degree to which decision actors cooperate or compete on planning and implementation decision tasks. In general, the climate for collaboration was not higher in linkage versus non-linkage states. Many actors in the least integrated states indicated a strong desire to develop collaborative ties. Correspondingly, there were surprisingly few instances of direct competition in non-linkage states. The most glaring example of competition was in Connecticut where several state agencies and some provider groups were in a territorial battle over data collection responsibilities. Similarly, the Arizona linkage project created a competitive threat to the CHSS agency by engaging in data activities. This resulted in destructive conflict between agencies. The more collaborative decision systems were characterized by common objectives, but differentiated functions.

Informal collaboration is clearly affected by the size of a state's decision system. In Maine, there is less formal collaboration and much informal cooperation because the actors frequently engage each other in a number of circumstances outside of manpower issues.

Routinization. Linkage states did appear to have more routinized procedures than non-linkage states. Arkansas, Maryland, New Jersey and North Carolina all possessed a commitment to circulation of planning documents and reports throughout state bureaucracy. Formalization of procedures was higher in the linkage states, in part because the linkage projects felt a need at least to report and receive comments on their activities. In non-linkage states, the effort to standardize contacts was less evident. In Florida, for example, the bi-lateral ties were much more routinized than any network or multiple agency linkages.

In summary, the decision systems in the linkage states were less complex and their structures were more consolidated with more routine decision procedures than non-linkage states. Some of these characteristics can be attributed to the linkage project commitment to develop coordination mechanisms. Thus, linkage states achieved more integration of decision-making functions than did non-linkage states.

Planning Input to Decision-Making. The ability of a linkage system to impact on decision-making relies on the generation and use of a reliable data base and analyses of manpower requirements. In this comparison, linkage and non-linkage states were classified into three categories of planning input:

	Linkage States	Non-Linkage States
Low Planning Use	Arizona	Connecticut Florida
Moderate Planning Use	Maryland North Carolina	Maine Illinois
High Planning Use	Arkansas New Jersey	Oklahoma

As for integration of decision-making, on this variable, the matched linkage states are broadly representative of the distribution of the entire sample of linkage states.

As was found in section 4.1.2 for non-linkage as well as linkage states, states which have higher degrees of integration of decision-making also have greater planning input into decision-making. For both linkage and non-linkage states, if there was a planning capability without a corresponding mechanism for implementation, there was less impact on decision-making. Still, some states lacked a centralized coordinating mechanism, but were able to have moderate impact on decisions. In Maine, the planning groups and the data collection efforts did have impact on the decision agents both in state government and in the private sector. Also, a number of studies have influenced manpower utilization. One explanation may be the small size of the state which allows for easy access to whatever planning products are developed. Still, in the much larger setting of North Carolina, a number of the products of the CHSS manpower component are used by groups such as AHEC's, rural care providers, and institutional providers.

There is a small difference between linkage and non-linkage states on this dimension. Again, New Jersey has much greater planning input than Connecticut, and North Carolina is higher than Florida, but Maine has greater planning input than its linkage match, Arizona.

The conclusion that might be drawn is that the linkage contracts slightly improved the state's ability to utilize whatever planning products might be generated. Equally important, the projects also improved the completeness and reliability of these planning products in the linkage versus non-linkage states. For example, Arkansas and Oklahoma both have high levels of planning input in their decision systems. However, the linkage project in Arkansas was able to devote much more effort to production of a state health manpower plan, whereas Oklahoma's Interagency Task Force on Health Manpower did not have the CHSS data nor the staff resources to produce a comparable document.

Decision Making Capacity Development. A comparison of the linkage versus non-linkage states in terms of tasks developed produces the following chart.

	Linkage States	Non-Linkage States
Low Capacity: less than 11 tasks developed substantially or less than 17 developed at least partially.	North Carolina	Maine Connecticut
Moderate Capacity: 12-14 developed substantially and 16-18 developed at least partially.	Arizona Maryland	Illinois Florida
High Capacity: at least 15 tasks developed substantially and 19 developed at least partially.	Arkansas New Jersey	Oklahoma

Two of the matched pairs showed linkage states as having greater capacity development than non-linkage states, and in one pair, the non-linkage state showed greater capacity development. However, for this analysis, it is more instructive to examine the change between pre-1974 capacity and post linkage period capacity.

As shown in Figure 4-6, some linkage states had developed more decision system tasks and some had developed fewer tasks than non-linkage states in the pre-linkage period. However, the average development for linkage states was slightly higher (9.8 vs. 9.6), perhaps reflecting the self selection of linkage states. The change in linkage states was substantially greater. Maryland and North Carolina significantly surpassed Illinois and Florida, respectively, and the average increase was 8.6 vs. 5.6 in favor of linkage states.

Overall, there was significant growth in the capacity development of all states. All of the states were classified as having low task development in the pre-linkage period. Two of the linkage states moved into the high capacity category while two linkage states moved into the moderate category. By comparison, one of the non-linkage states moved into the high category and two non-linkage states achieved moderate task development.

Figure 4-7 presents the overall comparison of decision systems in linkage and non-linkage states. Four of the pairs of linkage states showed equivalent levels of system effectiveness. Only one of the linkage states showed greater effectiveness than their matched counterparts. Although it is difficult to attribute the system's greater effectiveness entirely to the linkage project, the concept of linkages along with other developments were clearly more successful in New Jersey. A great deal of groundwork had been laid by the Department of Higher Education prior to obtaining the linkage contract, and there was a much more favorable environment for linkage. In contrast, Connecticut was a state where reorganization and agency instability created a relatively defensive atmosphere.

Figure 4-6

COMPARISON OF CAPACITY DEVELOPMENT IN LINKAGE AND NON-LINKAGE STATES

	Tasks Developed		Non-Linkage State	Tasks Developed	
Linkage State	Pre-1974	1974-78		Pre-1974	1974-78
Arizona	9	+8	Maine	3	+8
Arkansas	15	+6	Oklahoma	15	+4
Maryland	6	+12	Illinois	10	+6
New Jersey	13	+8	Connecticut	6	+6
North Carolina	6	+9	Florida	14	+4
Average	9.8	+8.6	Average	9.6	+5.6

Figure 4-7

COMPARISON OF OVERALL SYSTEM EFFECTIVENESS IN LINKAGE AND NON-LINKAGE STATES

State	Integration Decisions	Planning Utilization	Capacity Development	System Effectiveness
Arizona (L)	L	L	M	L
Maine (NL)	L	M	L	L
Arkansas (L)	H	H	H	H
Oklahoma (NL)	H	H	H	H
Maryland (L)	M	M	M	M
Illinois (NL)	M	M	M	M
New Jersey (L)	H	H	H	H
Connecticut (NL)	L	L	L	L
North Carolina (L)	L	M	L	L
Florida (NL)	L	L	M	L

L = Linkage State
NL = Non-linkage State

Rankings: H = high, M = Medium, L = Low

Summary of Analysis

There are a number of generalized findings from this comparison of linkages versus non-linkage states.

- The greatest difference in linkage effectiveness occurs where there is a strong environment for coordinative activity.
- Linkage states had greater emphasis on mechanisms which took a statewide policy perspective.
- Linkage states emphasized decision coordination mechanisms to a greater extent than did non-linkage states.
- Both linkage and non-linkage states pursued data and planning outputs to a similar extent.
- The findings on the relationships between integration of decision-making, planning utilization and capacity development from the analysis of the 17 linkage states were corroborated by the analyses of the non-linkage states. States which had high levels of integration showed greater planning input into decisions and greater capacity development.
- There were small improvements of the linkage states over the non-linkage states on the measures of integration, utilization of planning inputs and capacity development. This was due to one matched pair where the linkage state's system far exceeded that of the non-linkage state. Other pairs were roughly equivalent on system effectiveness measures.

In conclusion, this chapter has developed rankings of the effectiveness of the state health manpower decision systems and the effectiveness of linkage projects to improve those systems. The impact of the linkage program has been further analyzed by comparing a sample of linkage contract states versus non-linkage states. The data show significant gains in development of decision-making capability in both linkage and non-linkage states. Although linkage states were more effective on most of the crudely measured dimensions, the implementation of the linkage program clouds our ability to draw clear conclusions. States were self selected as those conducive to linkage development, and those most successful were given more time and money. Thus, close to half of the sample were judged better on most dimensions. Greater insight into the workings of linkage systems will be derived in the next two chapters based on comparisons of the more and less effective linkage states.

Chapter 5

THE STATE CONTEXT OF HEALTH MANPOWER PLANNING AND ITS EFFECT ON THE LINKAGE PROGRAM

Chapter 5

THE STATE CONTEXT OF HEALTH MANPOWER PLANNING AND ITS EFFECT ON THE LINKAGE PROGRAM

This chapter describes the various contextual factors which are thought to influence the nature of health manpower planning. Based on the evaluation of state decision systems in Chapter 4, the impact on the degree of effectiveness attained by each state's program is also assessed. First, the types of manpower problems and issues confronting the seventeen sample states are evaluated. Next, demographic and political factors, such as urban/rural splits, competition among regions within a state and the degree of gubernatorial support for manpower planning are addressed in some detail. Finally, characteristics of state health manpower decision-making systems are analyzed in terms of structure (e.g., role of health departments in linkage development, fragmentation of the public education sector) and of process (e.g., prior history of health manpower planning activities, prior coordination capacity among sectors of state government).

5.1 Health Manpower Problems and Issues Encountered by Linkage States

In all seventeen linkage states visited by members of the project staff, the two most universally discussed issues were those of aggregate supply and distribution of health manpower. In 1973, prior to the introduction of the Linkage Program, only five states in the sample had an "adequate" supply of physicians, as defined by a range of 10 percent deviation in either direction surrounding the national average of 161 physicians per 100,000 population.* Of these, one (Virginia) had only a marginally adequate supply. Ten other states in the sample clearly had inadequate numbers of physicians, whereas two (Maryland and Massachusetts) had oversupplies (see Figure 5-1). Without exception, the twin issues of geographic and specialty maldistribution were considered far more worrisome than that of aggregate supply. (Hawaii was the only state in which neither supply nor distribution of physicians raised great concern among planners.) In most instances, the shortage of primary care physicians in rural areas, coupled with the oversupply of highly specialized practitioners in metropolitan areas, drew the greatest attention. It is not surprising therefore that most states adopted linkage strategies in which physicians became principal targets or foci of planning activities.

Issues related to medical manpower supply and distribution often included the outmigration of physicians and medical graduates, the influx of foreign medical graduates, and the general quality of graduate medical education programs. Six states, for example, were acutely concerned by trends indicating increased physician outmigration. Three of these (Maryland, New Jersey and Ohio) were especially troubled by their seeming inability to retain their own medical school graduates and by their growing dependence upon less well-trained foreign medical graduates for services. New Jersey, in particular, directed considerable effort toward strengthening graduate medical education in the state, with emphasis upon attracting graduates of American medical schools. South Dakota, on the other hand, explored alternative methods of primary care delivery by encouraging the licensure and practice of physician extenders and nurse practitioners, as well as increasing physician training.

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* U.S. Bureau of the Census, Statistical Abstract of the United States: 1975. (96th Edition) Washington, D.C., 1975. Inadequate supply (MDs) = < 145 per 100,000 population. Adequate supply (MDs) = 145-177 per 100,000 population. Oversupply (MDs) = > 177 per 100,000 population. Based on 1973 data.

Fig

HEALTH MANPOWER PROBLEMS/IS

STATE	SUPPLY		MALDISTRIBUTION		NURSING EDUCATION & ROLES	ALLIED HEALTH OCCUPATIONS	PHY OUT
	MD	Nurse	MD	Nurse			
1. Arizona	A	O	✓	✓		✓	
2. Arkansas	I	I	✓	✓		✓	
3. Georgia	I	I	✓	✓	✓		
4. Hawaii	A	A				✓	
5. Maryland	O	A	✓	✓			
6. Massachusetts	O	O	✓	✓	✓		
7. Minnesota	A	O	✓	✓	✓	✓	
8. Mississippi	I	I	✓	✓	✓		
9. Missouri	I	I	✓	✓	✓	✓	
10. Nebraska	I	O	✓	✓			
11. New Jersey	A	O	✓	✓	✓	✓	
12. North Carolina	I	I	✓	✓	✓	✓	
13. Ohio	I	A	✓	✓		✓	
14. South Carolina	I	I	✓	✓	✓		
15. South Dakota	I	O	✓	✓	✓	✓	
16. Virginia	A*	A*	✓	✓		✓	
17. Wisconsin	I	A	✓	✓		✓	

*Indicates marginally adequate supply.

A = Adequate Supply
I = Inadequate Supply
O = Oversupply

ure 5-1

SUES PRIOR TO LINKAGE DEVELOPMENT

SICIAN MIGRATION	FOREIGN MEDICAL GRADUATES	GRADUATE MEDICAL EDUCATION	PHYSICIAN EXTENDERS/ NURSE PRACTITIONERS	LICENSURE	OTHER ISSUES
			✓		
					Manpower supply in state facilities
✓	✓	✓			
			✓	✓	Continuing education for professionals
				✓	
✓					
					Manpower supply in state facilities
✓					
✓	✓	✓		✓	
✓	✓		✓	✓	
					Geriatric and optometric manpower
✓			✓		
					Continuing education; geriatric, optometric and mental health manpower
	✓				

A second major problem area encountered by virtually all states was that of nurse supply and distribution. In contrast to experience with physician supply and distribution, six states had inadequate numbers of nurses while six others showed definite signs of oversupply, some serious enough to stir intense debate among planners and educators (see Figure 5-1).* In a few states, such as New Jersey and Virginia, where aggregate nurse supplies were more than adequate and where higher education boards possessed strong program review and approval powers, moratoria were declared on the introduction of new nursing programs, as part of the strategies employed by the respective linkage projects. In general, the issue of aggregate nurse supply was of less concern to many states than the problem of *geographic maldistribution*. As with physicians and most other health professionals, the practice locations of nurses tend to be concentrated in large urban centers. This is largely a function of the need for nurses to be more closely tied to institutional settings than many other practitioners, including physicians. For many predominantly rural states, such as Arkansas, Georgia, Mississippi and North Carolina, geographic nurse maldistribution was complicated by an oversupply of institution-based nurses and an undersupply of more mobile, public health nurses.

In other states, *nurse maldistribution by level of training* was a serious concern. In Massachusetts, Minnesota and Missouri, for example, questions were raised regarding the substitutability of licensed practical/vocational nurses for registered nurses, and about the articulation between levels of training. Debate has continued to this day over the appropriate types of basic nursing programs (e.g., baccalaureate degree versus associate degree versus hospital diploma) and over the need for the development of career ladders into more highly trained positions (e.g., master's and doctoral level programs in nursing administration, research and education). Questions of this nature were raised more frequently in states with an oversupply of nurses, but it is important to note that such nursing concerns were addressed to a substantial degree in almost every linkage state in the sample.

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* U.S. Bureau of the Census, *Statistical Abstract of the United States: 1975*. (96th Edition) Washington, D.C., 1975.
Inadequate supply (nurses) = < 342 per 100,000 population.
Adequate supply (nurses) = 342-418 per 100,000 population.
Oversupply (nurses) = > 418 per 100,000 population. Based on 1972 data where national average = 380 per 100,000 population.

Problems of supply and distribution of other health professionals were addressed much less often by states prior to linkage development. Dental manpower supply was viewed with concern by a number of states with significant shortages, such as Arizona, Arkansas, Mississippi and North Carolina. Virginia and South Carolina, on the other hand, focused on issues pertaining to optometry, podiatry and veterinary manpower. Eleven states, however, encountered problems involving various allied health occupations. In many instances, the problems revolved around the development of new programs to train additional physical therapists, respiratory therapists, X-ray technicians and other personnel. The key question often centered on both the geographic location of such programs in certain regions of a given state and on the educational setting, i.e., community college, vocational institute or some other institution. In a few cases, the introduction of new professionals, such as nurse midwives and dental auxiliaries, created considerable controversy. Massachusetts and New Jersey were two states in which such issues led to legislative debate over the licensure and credentialling of these professionals, and the legal limits of their ability to practice independently of physicians and dentists, respectively. Although these questions have yet to be resolved satisfactorily, they were of sufficient importance to many states to be addressed within the linkage program activities conducted after 1974.

In summary, the most commonly cited problems and/or issues facing the linkage states in 1973-1974 were those of physician and nurse supply and distribution. Allied health professional issues were cited more often in the context of licensure, practice, and educational resource questions than were issues relevant to other health professionals, such as pharmacists, etc. Finally, the issues of nursing roles and career ladders were raised to a large extent in nine states and to lesser degrees in the remainder.

The Impact of Contextual Problems. The effect of health manpower problems in a state on linkage system development was analyzed quantitatively by correlating the effectiveness of the decision system with supply figures for nurses and physicians. Using deviations from national averages to indicate surpluses and shortages, *there does not appear to be a direct connection between manpower supply prior to linkage development and the attained level of program effectiveness*. Neither nurse nor physician supply data display any discernable pattern in relationship to the ability of the state to develop an effective planning and linkage system.

Another indicator of the degree of health manpower problems in a state is the relative *policy priority* assigned to health manpower issues. Although this variable is more subjective and perceptual, it is more indicative of the actual political support for health manpower planning (and therefore for the linkage program). For example, health manpower issues received high priority in only two states, Arkansas and Virginia. In Arkansas, two high-level Governor's Conferences were convened to address health manpower matters, whereas the legislature in Virginia mandated that health manpower planning activities be conducted by the state's Council of Higher Education. Although five states attached moderate importance to manpower concerns, the remainder tended to direct exceedingly little attention to such issues. In a number of these states, planners were generally preoccupied with issues of health care cost containment and of facility construction and development. Health manpower planning therefore represented only a small thread in the larger fabric of comprehensive health planning.

In contrast to actual supply deviations, the perception of problems in the state by key decision makers displayed a marked pattern in relation to system effectiveness. As indicated by the policy priority for health manpower concerns in the state government, the perceived problem had a strong correlation (gamma = .94). In some respects, this finding should not be surprising, since states which were strongly motivated to tackle health manpower problems in 1973 should have been the most likely ones to compete for and receive linkage contracts. Conversely, those states which attached little importance to manpower matters should have been relatively less likely to achieve high levels of program effectiveness.

While it may seem that a state's ranking of manpower as a priority may have been a self-fulfilling prophecy of its success in developing linkage and planning systems, this point should not be overlooked or dismissed too easily. It would seem from the data that the relative importance attached to health manpower by a state is an important predictor of how successful its linkage program might be, assuming that other factors (resources, mechanisms) are present to assure implementation of the linkage strategy.

5.2 Demographic and Political Contextual Factors in Linkage States

Demographic factors which reflect the general context or environment of a state and which were expected to affect the ability of the state to conduct effective planning and decision-making for health manpower include population size, density, urban/rural disparities and intra-state regionalism.

In several standard health manpower planning methodologies, population serves as the basis upon which the need for health manpower is expressed. Knowledge of population size is therefore necessary for assessing current and future supply requirements and for determining the adequacy of existing manpower production capacity. However, population size alone will not be a sufficient indicator of manpower need and/or demand. Population density is especially important since it will suggest to the planner two things: 1) the need for either more concentrated or more dispersed distribution of manpower throughout a given state, and 2) the strategy to be employed in attaining the desired end. For example, sparsely populated states faced with moderate manpower shortages may be better off pursuing recruitment programs or alternative service delivery methods rather than expanding current manpower production capacities at much greater expense. Although stated simplistically, this example illustrates how the context of a state may influence the way in which manpower planning is conducted and, therefore, the manner in which linkages may have been developed.

In the seventeen linkage states, five states had large populations (in excess of 5 million), nine had medium-size populations (2-5 million) and three had small populations (less than 2 million). Not surprisingly, in light of the previous discussion, states in the same population size category varied significantly in the manpower problems which they each faced in 1973. Massachusetts, for example, had a large population and an oversupply of physicians. North Carolina, another state with a large population, had an inadequate number of physicians, particularly primary care practitioners. This disparity in manpower supply can be partially explained by the different population densities of the two states. Massachusetts, which was very densely populated (> 200 persons per square mile), had physician concentrations which coincided rather closely with population concentrations in urban areas. North Carolina, by contrast, had a moderately dense population (100-200 persons per square mile) which was more evenly distributed throughout the state but which, due to its rural character, did not correspond well to the physician concentrations in metropolitan areas. Pronounced urban/rural disparities of this kind might be expected to influence the linkage strategy of the affected state. In the case of North Carolina, much effort was expended in compiling information on physician location in order to identify underserved areas eligible for assistance from the National Health Service Corps.

A fourth demographic factor which may affect linkage development and planning is intra-state regionalism. Only three states in the sample (Arkansas, Mississippi and North Carolina) were each internally homogeneous in terms of population characteristics and economic resources. The other fourteen showed evidence of strong intra-state regional competition, which was mostly bipolar but which, in some cases, involved as many as five or six major distinct regions (see Figure 5-2). Ohio, for instance, contained six major metropolitan areas which, although dispersed throughout the state, competed with one another for health manpower and for economic resources to develop educational programs and facilities. The need for greater planning coordination among these urban centers may have induced the state to adopt its linkage strategy of focusing on organizational development tasks. By contrast, the seven states which each had two competing regions felt less inclined to adopt this sequence of tasks. Massachusetts and Hawaii opted instead for a methodological sequence which emphasized the development of planning methods; South Dakota chose to follow a plan development sequence; and Minnesota and Wisconsin both sought to direct their efforts toward improving decision-making coordination among organizational actors (strategies of various states are discussed in more detail in Section 6.3).

Intra-state regionalism and the competition which it fostered were evident not only in the marketplace for health manpower and educational resources, but in the political arena of the state government as well. In view of the fact that fundamental resource allocation questions, i.e., budgetary matters, were (and are) weighted by both the governor and the state legislature, the political orientations of these governmental actors may have been important to the success of linkage development. In more tangible terms, the degree of

Figure 5-2

DEMOGRAPHIC AND POLITICAL CONTEXTUAL FACTORS PRIOR TO LINKAGE DEVELOPMENT

STATE	POPULATION SIZE	POPULATION DENSITY	URBAN/RURAL DISPARITIES	REGIONALISM (NUMBER)	BALANCE OF POWER	HEALTH MANPOWER PRIORITY
1. Arizona	Medium	Low	Pronounced	3	Legislature	Low
2. Arkansas	Medium	Low	No	Homogeneous	Governor	High
3. Georgia	Medium	Low	Pronounced	2	Governor	Low
4. Hawaii	Small	Moderate	Yes	2	Even	Low
5. Maryland	Medium	High	Yes	4	Governor	Low
6. Massachusetts	Large	Very High	Yes	2	Legislature	Low
7. Minnesota	Medium	Low	Pronounced	2	Even	Moderate
8. Mississippi	Medium	Low	No	Homogeneous	Legislature	Low
9. Missouri	Medium	Low	Yes	5	Governor	Low
10. Nebraska	Small	Low	No	4	Legislature	Moderate
11. New Jersey	Large	Very High	Yes	2	Governor	Low
12. No. Carolina	Large	Moderate	Pronounced	Homogeneous	Legislature	Low
13. Ohio	Large	High	Yes	6	Even	Low
14. So. Carolina	Medium	Low	Yes	3	Legislature	Moderate
15. So. Dakota	Small	Very Low	No	2	Even	Moderate
16. Virginia	Large	Moderate	Pronounced	5	Legislature	High
17. Wisconsin	Medium	Low	Pronounced	2	Even	Moderate

political support afforded the concept of linkages by the governor and/or by the legislature may have either encouraged or discouraged universal acceptance of the program and its objectives. Political support of this nature may have also enhanced the ability of each program to acquire necessary resources and cooperation from other groups in the state.

An important factor moderating the degree of gubernatorial or legislative support for the program is the balance of power which exists between the two branches of government. The relative powers are determined by analysis of specific decisions (e.g., budget, new programs, practice legislation) to determine the points of influence. Thus, executives with item veto of budgets have relatively more power than those without such authority. In the sample of states, seven had legislatures which were clearly stronger than the respective governors while five had state governments in which the balance of power was evenly split (see Figure 5-2). The remaining five had strong governors, some of whom lent support to the linkage concept and thus may have influenced linkage development and subsequent program effectiveness.

The general demographic and political characteristics of the state, including population size and density, urban/rural disparaties, and intra-state regionalism, probably have an impact on the types of problems faced by the state and the planning methods appropriate to address problems, but no direct association with linkage system effectiveness was displayed. The demographic characteristics, in particular, have effects on the content of health manpower decisions rather than the structure and process of decision-making, which is the major concern of linkage development.

Intra-state regionalism is a variable which describes the structure of state politics on a broad level, and most states exhibit important divisions along this dimension. Noting the lack of association to linkage system effectiveness and the strong influence of this variable on state policy decisions reported during site visits, we can speculate on the reasons for the results.

The dynamics of regionalism are probably most important to legislative/political decisions rather than to the administrative linkage system, so no direct impact is felt. Furthermore, in the states where they are strong, sub-state rivalries permeate all political decision-making. The resulting structure of interaction is therefore reflected in all forums for decision-making, including the health manpower linkage systems. Although this adds a consideration to development of the linkage system, it does not change the basic process or other factors associated with success (which also adhere to the regional factors).

The more immediate political environment of state politics displayed in the balance of power between the branches of government has a more direct impact on the linkage system. Although data from the seventeen sample states do not indicate a clear association between gubernatorial strength and linkage development, the data yield some suggestive findings. Of the five states in which the executive branch appeared to be stronger than the legislative branch, only two (Arkansas and New Jersey) were located in decision systems that were considered to be most effective. Two attained medium effectiveness (Maryland and Missouri), and one (Georgia) received a rating of least effective. On the other hand, four of the seven states with strong legislatures were judged to be least effective, suggesting that a strong legislature may tend to inhibit development of linkage and planning systems for health manpower. Virginia is an obvious exception to this postulate, since the state legislature was a strong advocate of manpower planning and of the linkage program. Of the six states which achieved most effective status, five were states in which the governor was either stronger than, or in balance with, the legislature. Virginia again was a notable exception. These findings suggest that either gubernatorial strength or an even balance of power between branches might be more conducive to linkage development effectiveness than legislative strength.

In summary, while the aforementioned demographic and political factors should be taken into account by states seeking to develop linkage systems, the balance of power, and policy priority of manpower appear to have the most direct impact on linkage development. Solicitation of gubernatorial support for the program, and elevation of health manpower issues to high priority status would seem to be desirable prerequisites for linkage development.

5.3 Characteristics of Health Manpower Decision-Making Context in Linkage States

An important factor in determining the degree of linkage program effectiveness attained by any given state should be the inherent ability of the state to perform various planning and coordination activities. Since the ability to conduct such activities is dependent, in large part, upon the nature of decision-making in the state, it is important to examine the organizational characteristics of state health manpower decision-making systems and the degree of decision system development prior to the linkage project.

5.3.1 Organizational Characteristics

Organizational characteristics which may have implications for linkage success include the leadership role of state health planners in health manpower planning activities, the organization and authority of the state higher education board, the organizational cohesiveness of the state's public education system, and the influence of the state's private education sector in government decision-making.

Leadership Role of Health Planners. Because manpower is an essential component of any productive work, planning for manpower generally cuts across normal lines of organization. Thus, on the supply side, the whole education system is concerned with producing manpower, while service institutions create the demand for manpower in the health delivery system. In general, the supply and demand for manpower resources have not been coordinated in the past. The education system has determined the need for its product and has graduated students who entered the labor market. The labor market, controlled and facilitated by professions through licensing and manpower services, has met the need for services in a *laissez faire* system. In order to plan for manpower, some leadership is required to coordinate among the users of manpower and to link them to the producers. A logical place for such leadership is a health department or a designated health planning agency.

Prior to the linkage projects, either the department of health or the CHP 'A' agency was recognized as a health manpower planning leader in only six (Arkansas, South Dakota, Maryland, Minnesota, Nebraska and Wisconsin) of the seventeen sample states (see Figure 5-3). In a few instances, health planning agencies abdicated their implied manpower planning responsibilities, leaving a noticeable vacuum within the state planning structure. As a consequence, linkage program designation was actively sought by diverse groups, such as higher education boards (e.g., New Jersey, Virginia,) university groups (Hawaii, Arizona*), an arm of the governor's office (Mississippi, South Carolina), and a consortium of state agencies for manpower, education and human services (Massachusetts). The reluctance of some state health departments and health planning agencies to assume a leadership role may have been indicative of the general attitude toward health manpower issues which was prevalent at that time.

The recognition of the state health department or the state health planning agency as a leader to coordinate among users and suppliers of health manpower proved to enhance the final outcome of decision system development. All states in which health planners had assumed a leadership role prior to the linkage project achieved at least medium effective systems, while seven of

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* In Arizona, linkage program designation and health manpower planning responsibilities were formally held by the state health department. However, the majority of planning tasks as well as project resources was delegated to the University of Arizona through a subcontract.

Figure 5-3

HEALTH MANPOWER DECISION-MAKING SYSTEM CHARACTERISTICS PRIOR TO LINKAGE DEVELOPMENT

STATE	HEALTH DEPT. AS PLANNING LEADER	HIGHER EDUCATION BOARD*	HIGHER EDUCATION SYSTEM**	PRIVATE EDUCATION INFLUENCE	PRIOR MANPOWER FORUM	PRIOR STUDIES/ ANALYSES	PRIOR PLANS/ PRIORITIES	PRIOR PROGRAM REVIEW	PRIOR SECTOR COORDINATION
1. Arizona	No	GB	F	Low	Yes	No	No	Yes	None
2. Arkansas	Yes	CC	U	Low	No	Yes	Yes	Yes	Moderate
3. Georgia	No	GB	F	High	No	Yes	No	No	Little
4. Hawaii	No	GB	U	Low	No	No	No	Yes	Little
5. Maryland	Yes	CC	F	Moderate	Yes	Yes	No	No	Little
6. Massachusetts	No	CC	F	High	No	No	No	Yes	None
7. Minnesota	Yes	CC	F	Low	No	Yes	No	Yes	Moderate
8. Mississippi	No	GB	F	Low	No	No	No	No	None
9. Missouri	No	CC	U	Moderate	No	No	No	No	None
10. Nebraska	Yes	CC	F	Moderate	No	Yes	Yes	No	Little
11. New Jersey	No	CC	U	Moderate	Yes	Yes	Yes	Yes	Little
12. No. Carolina	No	GB	F	Moderate	No	No	No	No	None
13. Ohio	No	CC	F	Moderate	Yes	Yes	Yes	Yes	None
14. So. Carolina	No	CC	F	Low	No	No	No	No	Little
15. So. Dakota	Yes	GB	U	Low	Yes	Yes	Yes	Yes	Little
16. Virginia	No	CC	U	Low	Yes	Yes	Yes	Yes	Moderate
17. Wisconsin	Yes	GB	U	Moderate	Yes	Yes	Yes	Yes	Little

*GB = Governing Board
CC = Coordinating Council

**F = Fragmented
U = Unified

the eleven states were among the least effective. (The gamma statistic was a strong .85 for the relation between prior health planning leadership and effectiveness of the decision system.) In the two highly effective health manpower decision systems where health planners had no prior role (New Jersey, Virginia), higher education planners played a dominant leadership role, but incorporated health planners into the process through subcontracts and the transfer of responsibility to the planning agency (e.g., in New Jersey, the health manpower data system was transferred to the Health Department). Thus, the role of health planners in the development of the health manpower decision system cannot be underestimated.

On the supply side of the health manpower equation, the structure of the higher education system affects the development of effective health manpower decision systems. The type of governing board, the cohesiveness of the different levels and types of edcuation and the influence of the private education sector all contribute to the ability to plan and make health manpower policy.

State Higher Education Boards. State higher education authority in any given state is usually centered in one of two organizational forms: a governing board with strong authority over the state higher education system, or a coordinating council which facilitates decision-making among several autonomous boards representing different levels of the educational system. Seven of the sample linkage states had governing boards whereas ten others had coordinating councils (see Figure 5-3). This division of the sample was originally by design since it had been hypothesized that the organizational type of the higher education board might influence the ability of the state to coordinate planning and decision-making activities for health manpower.

Contrary to expectations, the data suggest that *higher education coordinating councils may be more conducive to linkage development and, hence, to program effectiveness than governing boards*. Analyzing the effectiveness of decision systems which contain a governing board or coordinating council reveals a moderately strong relationship (gamma = .54) between more effective decision systems and coordinating council structures. Also, 8 out of 10 coordinating councils are located in medium or high effective decision systems while only 2 of 7 of governing boards are in effective systems (Fisher's exact test, p = .05). It is difficult to account for this other than to postulate that the cooperative orientation of coordinating councils in successful states (e.g., New Jersey, Virginia, Minnesota) may have facilitated planning and decision-making effectiveness, whereas the independent attitude of governing boards in some states (e.g., Arizona, Georgia, Hawaii, Mississippi) may have detracted from linkage efforts there. More discussion of the higher education governing structure is contained in Section 6.2--linkage project organization and management.

State Higher Education System Cohesiveness. The type of organizational structure adopted by state higher education systems may not in itself be a sufficient predictor of linkage program effectiveness. It is also important to consider the cohesiveness of the system with respect to decision-making. For example, states in which planning responsibilities and decision-making authority are fragmented among several educational levels or sub-sectors (i.e., state university, state colleges, community colleges, post-secondary vocational schools) might be expected to have greater difficulty in establishing linkages than states in which there are unified decision-making structures with coordination among various system sub-sectors. Prior to linkage development, ten sample states had higher education systems in which planning efforts were fragmented and marred by competition among sub-sectors or educational levels (see Figure 5-3). The net result of such uncoordinated decision-making was unnecessary duplication of program development activities. By contrast, the seven states which had systems with more unified planning and decision-making were better able to cope with proliferation of unnecessary programs. These states were also able to allocate resources for program development in a more cooperative manner.

The data support the contention that cohesiveness of the education system is desirable for linkage development. Five of seven states with public education systems characterized by unified decision-making were assessed to be most effective in their decision system. By contrast, only one of ten states with systems marked by fragmented decision-making achieved this level of effectiveness. Viewed in slightly different terms, six of the seven states judged least effective exhibited fragmented decision-making, whereas five of the six states with ratings of most effective displayed unified decision-making (gamma = .82; Fisher's exact test, p = .016 for association of unified education with effective decision system). These findings are quite suggestive of a positive association between a unified public education system and linkage program effectiveness. Fragmentation of the higher education system may inhibit linkage development.

Private Education Sector Influence. Another factor which may affect the development of linkages is the influence which private educational institutions may exert over resource allocation or program development decisions within a state's higher education system. In two states, Massachusetts and Georgia, private educational institutions account for large percentages of the medical and health professions school enrollment. By virtue of this and their relative fiscal strength, these institutions were (and are) able to influence state-wide health manpower policy in ways not commonly seen in other states. Without their cooperation, certain projects are less likely to flourish and planning efforts may become duplicative.

Seven other states in the sample had moderately strong private education sectors. In Ohio, where regionalism exists, the added dimension of private versus public institutions may have increased the competitive climate and influenced the state's linkage development strategy to the point where considerable emphasis was placed upon organizational relations. Eight states, on the other hand, showed little private sector influence, thereby allowing their public education systems greater freedom in which to plan unencumbered. A number of these (Arkansas, South Dakota, Virginia and Hawaii) also possessed public higher education systems which were reasonably unified in their planning efforts.

A moderately negative association (gamma = -.42) exists between private education sector influence and linkage program effectiveness. This would suggest that states with relatively strong or highly influential private education sectors may experience some difficulty in implementing linkage programs while states with comparatively weaker private sectors might expect less interference. In either event, the degree of private education sector influence must be carefully assessed by states when formulating linkage strategies.

5.3.2 Prior Decision System Development

The prior development of the decision-making system must also be considered in examining the impact of the context of health manpower planning on the success of the linkage project. Factors to analyze include prior planning or decision-making mechanisms (e.g., manpower forum, educational program review authority) and discrete products (e.g., manpower studies, analyses, plans and stated priorities). Prior planning coordination among decision-making system sectors would also likely contribute to project effectiveness.

Prior Manpower Forum. Seven states in the sample (see Figure 5-3) had established manpower forums prior to 1973. For the most part, these functioned in very limited capacities, usually as information-exchange groups. However, in a few states, such as New Jersey and Virginia, these forums served as advisory groups to decision-making bodies. In both of these states, the higher education bodies actively sought the advice of the health manpower forums in making program development decisions. The existence of such forums along with linkage projects made a difference in decision system development. Four of the seven states which had established manpower forums prior to 1973 achieved the highest level of program effectiveness, as compared to only two of the ten states without such prior mechanisms. (Fisher's exact test, p = .013 for significance of relationship). Also, it is interesting to note that five of the seven states receiving least effective ratings did not have previous forums, advisory groups or task forces. These findings suggest that prior mechanisms of this type may be beneficial to a state's linkage efforts.

Prior Health Manpower Studies/Analyses. In ten sample states (see Figure 5-3), previous efforts had been undertaken either to perform studies or analyses of health manpower needs or to develop planning methods for assessing such needs and for projecting future supply requirements. Few of these efforts, however, involved rigorous analyses or sophisticated methodologies. Virtually all were conducted prior to development of the Cooperative Health Statistics System and therefore were based on data whose validity and reliability were questionable.

Although not very rigorous in nature, manpower studies and analyses were performed in all six states with most effective decision systems, but such studies were conducted in only two (Georgia and Ohio) of the seven least effective systems (gamma = .86; Fisher's exact test, p = .017). Also, none of the seven states lacking previous analyses were able to attain better than a medium effectiveness rating. These findings suggest that prior manpower studies may serve as a useful base upon which to build a linkage program.

Prior Plans and Priorities. Seven states showed evidence of previous attempts to develop either plans, priorities or both for higher education. Three states (Ohio, Arkansas and New Jersey) had developed master plans for higher education which included priorities specific to health manpower training programs. Virginia and Wisconsin, on the other hand, had specified manpower priorities, but not within the context of an overall plan. South Dakota was able to develop both a higher education plan and a component of its state health plan (CHP) which specifically addressed health manpower concerns.

As in the previous case, *this characteristic also appears to enhance linkage program effectiveness*. In the sample, five of the seven states exhibiting evidence of previous plan development efforts were found to be most effective in establishing linkages, while one (Minnesota) of the ten states without prior plans or priorities achieved this distinction (gamma = .82; Fisher's exact test, p = .017). In addition, the lack of earlier plans may have contributed to the low level of program effectiveness found in six states: Arizona, Georgia, Hawaii, Massachusetts, Mississippi and North Carolina.

Prior Educational Program Review Authority. Program review and approval authority by a higher education body represents a strong mechanism whereby program development decisions can be implemented and enforced. Stringent review of new programs on the basis of need, academic viability and other criteria can eliminate unnecessary duplication or proliferation of training programs in adequately supplied manpower categories. The review mechanism not only serves as a deterrant to spurious applications for less needed programs, but can also be used proactively to encourage qualified institutions to develop education programs for needed types of manpower.

Ten states had higher education bodies which possessed program review and approval powers (see Figure 5-3). Of these, all but Massachusetts were empowered to review new post-secondary programs on the basis of need. Some, such as New Jersey, had authority to review and "recommend" action on new programs of private educational institutions. Most states, however, limited the review powers of the higher education bodies to the public sector only.

The data suggest that *the presence of program review authority in a state's higher education system facilitated the development of an effective system of decision-making.* Six of the ten states with such authority developed highly effective decision systems, but none of the states without this authority was as successful (gamma = .45; Fisher's exact test, p = .017).

Prior Sector Coordination. Coordination across sectors in the form of communication, consultation and, perhaps, joint decision-making is an integral part of any effective linkage program. Prior to 1973, no sample states could be characterized as having had a high degree of coordination among organizational actors in the four sectors of interest (health services, health occupations education, health manpower services, and health policy-finance). Three states, though, had a moderate degree of coordination: Arkansas, Minnesota and Virginia. Two of these, Arkansas and Virginia, were the only states which had assigned high priorities to manpower issues before the onset of the Linkage Program. Minnesota's degree of sector coordination might be explained by the generally positive orientation of that state's health care industry toward comprehensive health planning, and the willingness of state agencies and private groups to sit down and discuss issues together. Of the remaining fourteen states, eight displayed only a small degree of coordination, and six exhibited virtually no coordination among sectors. The states in this last group were characterized by decision-making systems in which sectors conducted planning activities independently of one another. Consultation across sectors with respect to decision-making was a rare occurrence.

States with higher degrees of across-sector coordination prior to the linkage projects were able to develop more effective decision systems for health manpower. All three of the moderately coordinated state systems prior to linkages, were among the most effective decision systems and all of the most effective systems had some prior sector coordination. On the other hand, five of the six states which had no prior coordination were among the least effective systems. (The strong correlation is indicated by a gamma of +.94). Apparently, the previous relationships greatly helped states initiate a program to plan and coordinate health manpower decisions.

Prior Decision-Making Capacity. In Section 4.1.3, each sample state was assigned to one of three categories (low, moderate and high) describing the extent of development of decision-making capacity achieved by the system in that respective state. The rankings of the seventeen states on this measure of effectiveness were similar to, but not exactly the same as, the rankings of overall system effectiveness. It is important to recognize that a state's final ranking on decision-making capacity development, i.e., the number of decision tasks which have been developed, is a function both of the developmental activities that occurred during the timespan of its linkage contract and of the level of development which it had attained prior to linkage initiation, i.e., its "starting point." This last characteristic may be viewed as a contextual factor intrinsic to the state's political and organizational environment.

Of the seventeen states, fifteen began their linkage development with low decision-making capacities (less than ten tasks developed substantially or less than fifteen developed at least partially). Only two states, Arkansas and Nebraska, began with moderate capacities (at least eleven tasks developed substantially and seventeen developed at least partially). In all, ten states were able to increase their decision-making capacities as follows:

- From Low to Moderate Capacities: 5
  Arizona, Maryland, Minnesota, Missouri and South Carolina
- From Low to High Capacities: 4
  New Jersey, South Dakota, Virginia and Wisconsin
- From Moderate to High Capacities: 1
  Arkansas

Of course, not all of the observed changes in each state could be ascribed to the linkage program, but it is remarkable to note that the majority of the states made obvious progress, and that nine were able to do so even though they began from an apparently low starting point. This suggest that *low prior decision-making capacity may not necessarily be a strong inhibiting factor in the attainment of overall linkage program effectiveness.*

In summary, several contextual factors appear to have been associated with linkage program success. The assignment of high policy priority to health manpower issues and the existence of previous coordination among organizational actors both were found to be positively associated with a high level of program effectiveness. The influence of private education institutions in government decision-making, on the other hand, was found to be potentially inhibitory toward effective linkage development. In addition, a balance of power in state government which favors the legislature may interfere with linkage development unless the legislature strongly advocates health manpower planning. State higher education systems which contain coordinating councils and which exhibit unified decision-making appear more likely to facilitate linkage development. Finally, states which possess tangible planning and decision-making mechanisms (e.g., manpower forums, program review, analyses, plans and priorities) seem more likely to achieve higher levels of program effectiveness.

Chapter 6

THE STRATEGY AND MANAGEMENT OF STATE LINKAGE PROJECTS

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THE STRATEGY AND MANAGEMENT OF STATE LINKAGE PROJECTS

This chapter describes and evaluates the approaches taken by the linkage program contractors in the seventeen linkage states that were analyzed in this study. Based on the assessment in Chapter 4 of overall effectiveness of the individual linkage projects and the entire health manpower decision systems, the important strategic and management factors to be considered in the development of a planning and linkage system are identified. Section 6.1 classifies and assesses the strategies used by linkage projects to develop planning and decision making. Section 6.2 describes and analyzes some of the operational aspects of implementing a strategy for planning and linkage system development. Finally, Section 6.3 reviews the key outputs of the linkage strategy--the linkage mechanisms which were instituted in the sample states.

6.1 Strategic Approach to Development of Planning and Linkage Systems

Given the overall goals and Federal Program direction of Linkage Projects, a variety of approaches were employed to develop the states' planning and linkage systems. The strategy of the project is the general framework for identifying specific project tasks and ordering them in such a way as to achieve the objectives and goals of the project.

In order to construct a strategy for development of the system, the contractor had to define the technical and/or organizational *emphasis* to take; the breadth and depth of focus on different occupations or health manpower programs had to be determined to define the *scope* of the project; and the logical progression of development of separate tasks to put the system in place had to be determined to define the *sequence* of the project.

Prior to the linkage projects, very little development of the functional elements of a decision system for health manpower had been accomplished in any of the linkage states. Much of the effort of development and the sequencing of tasks was aimed at initially establishing functional elements, such as data systems, analytical methods, planning processes and administrative decision implementation mechanisms. Thus, taken together, the emphasis and sequence of linkage projects are used to describe the approach employed by projects for *functional* development of the system. On the other hand, the scope of the project describes the *substantive* breadth of effort and the content of specific issues which were addressed in the system. For example, many projects developed their functional ability to plan and coordinate manpower decisions by establishing a planning process within a narrow scope of a single substantive area such as nurse training. Later sequences included expansion of the scope to address physicians or allied health professionals.

Not all of the linkage projects made a concerted effort at the beginning of the project to map out a complete strategy in terms of such variables as emphasis, scope and sequence. In fact, as will be described, many states approached the project as the straight-forward task of programming the scope of work in the contract. During such projects, the strategic implications with respect to ultimate objectives may have been addressed in the course of events, but this was usually an *ad hoc* effort to resolve a narrow question. Other projects addressed the overall strategic implications of project tasks (usually through the advisory group mechanism) at the beginning of the project in broad terms, and then updated their approach as events unfolded. Whether or not a conscious effort was made to address overall strategies, the emphasis, sequence and scope of the project had implications for the approach to management of specific tasks for all projects. Hence, they are useful in the interpretation of specific project actions. The following is a classification of linkage projects in terms of the three variables, and an assessment of the resulting strategies taken to develop functional and substantive elements of the health manpower decision system.

6.1.1 Strategies for Development of Functional Elements of Decision Systems

6.1.1.1 Emphasis

The emphasis of the project describes the operational objectives and major thrust of development of the linkage network and decision-making tasks. Although many projects were able to emphasize more than one objective, the major emphasis is important to the strategy because it is indicative of the orientation of the project toward change in the decision system. Six possible developmental emphases have been identified in the sample of Linkage Contracts as follows:

- Development of inter-organizational relationships and coordination of decision-makers or planners;
- Acquisition of legitimate authority or political resources to develop a power base and influence decisions;
- Development of comprehensive plans and the establishment of priorities for future decisions;
- Development of technical capability for planning and decision-making;
- Development of a data base for planning and evaluation;

- Development of health manpower programs (e.g. recruitment and retention programs or training programs).

Except for direct program development, all of the emphases were utilized in the strategies of one or more of the Linkage Projects.

As was described in the discussion of goals of projects (see Section 4.2), the contractors had different emphases in their approaches. This was due in part to the different starting points of the projects and also to the different strategies of the projects. Patterns of the approaches are described below in terms of the combinations of emphases observed for sample states. The seven patterns of approaches presented are ordered in terms of increasing impact on decision-making for health manpower.

Foundations. Several projects (Georgia, Mississippi, North Carolina, Ohio) which had either limited fiscal resources or limited political resources (little support for manpower planning) or both, concentrated most of their effort on obtaining background information for planning and linkage efforts. Activities were undertaken, such as inventories of planning activities, identification of data sources, search of literature, design of alternative linking mechanisms, or establishment of advisory groups to review project products. North Carolina had good data and analysis resources in the state as well as basis for some linkage in the AHEC system, but too few project resources or interest on the part of the strong education sector to go beyond the foundation to establish communication with the data system. Ohio had a fully funded project, but no support from the planning agency to engage in any meaningful planning activity. Mississippi had few resources and no interest in the state to develop a linkage concept. Georgia had few resources, a weak institutional base in the planning agency, and weak analytical support. Recommendations were made to further develop planning and linkage capability but were not carried out in the education dominated situation.

Data Development and Coordination. Projects in Arizona and South Carolina emphasized coordination and development of data resources for planning. South Carolina's project located in Health Statistics, linked education program data with manpower and service data; Arizona had difficulty implementing its surveys because of the lack of cooperation of the separate Health Statistics Agency.

Methodological Development. The major effort in Hawaii and Massachusetts was on the development of planning methods. Neither had any previous basis for health manpower planning, nor a forum to impact on decision making. Hawaii's demonstration effort was located in the School of Public Health and had to be implemented elsewhere. Massachusetts developed a range of studies on manpower, but did not develop linkages to implement recommendations.

Research Development and Coordination. The Missouri and Nebraska projects focused on refining data and developing a series of studies and planning recommendations on health manpower categories. Advisory Committees provided only limited linkage functions; primarily they provided technical guidance and insured the accuracy of assumptions and data. Maryland initially focused on developing data and coordination of planning efforts. Later, methods were emphasized and effort was focused on production of studies to support specific decisions and to aid in drafting the manpower component of the State Health Plan.

Planning Development Coordination. With limited prior development, Arkansas and South Dakota developed coordination mechanisms to guide comprehensive planning efforts. In spite of limited data resources in both states, coordinated efforts to develop a first generation of health manpower planning documents were pursued. This required actors relevant to health manpower decisions to interact and to make critical judgments about problems, goals, interpretation of data, and identification of alternative recommendations to solve problems. Where gaps existed, data refinements were proposed for inclusion in later iterations of plans. Implementation and impact on decision-makers followed from institutionalization of the process and commitment of decision-makers involved in the process to the recommendations. In this first generation of planning, significant effort was devoted to publicity and wide ranging input (e.g., through Governor's Conferences and news releases) to enhance the legitimacy of planning.

Decision-Making Coordination. The major activities in Minnesota and Wisconsin were directed toward development of forums and foci for coordination of political resources and decision-making efforts in the structures of the state government. Linkage mechanisms served to coalesce interests in a forum where concerted analysis and decision-making could be directed toward resolution of issues by those directly involved in implementation of choices. Data and methodological development were directed primarily toward individual issues on a case by case basis rather than toward comprehensive planning for future decisions.

Decision System Coordination and Refinement. In both Virginia and New Jersey, considerable development of planning and coordination of health manpower decisions had occurred prior to the linkage contracts. Both had significant authority for health manpower education in their Higher Education Boards and each had some elements of data and plans for health manpower education. Efforts were devoted to the continued development of the data resources and the coordination of actors in policy advisory committees. The major emphasis was on the refinement of methods and analytical capability to support planning and decision-making. The general strengthening of on-going development thus enhanced the credibility of the planning and linkage effort and led to an increase in the power base of the coordinated system to address new or more difficult issues.

6.1.1.2 Sequence

The sequence describes the logic behind the ordering of tasks to achieve any particular scope and emphasis. The sequence of the linkage strategy thus puts the scope and emphasis into an evolutionary developmental framework. In the linkage projects studied, four types of sequences have been observed, all aimed at initiating the functional elements of the decision system. Two types, information development and plan development, are related to the technical aspects of providing inputs to decision-making; two others, decision structure development and political development are related to organizational tasks. Each of the four types are described below. The sequences described are pure types which do not reflect any particular situation, but instead illustrate and characterize the steps of the strategic approach. Any specific case might blend different aspects of different types, depending on the circumstances. After describing the pure sequences, linkage projects are described in terms of the combinations of strategic sequences utilized.

Information Development Sequence. The information sequence is a logical building of the data and methodological inputs into planning and decision-making.

1) At the most fundamental level, the data requirements are established, and procedures to obtain accurate and reliable data are instituted.

2) With good data available, the methodologies for analysis of data are developed to determine supply and demand for manpower and to make accurate future projections.

3) After a rational analysis of manpower problems, plans and recommendations to resolve problems are devised.

4) Finally, recommendations and plans are implemented through the administrative structure in the public and private sectors.

Planning Development Sequence. The planning sequence deemphasizes some of the initial information steps relating to data gathering and refinement of methods, and emphasizes instead the identification of future requirements and priorities.

1) Inventory of Existing System - Identify and assess existing data sources to develop basic inventories of educational production, health manpower supply, and agency planning capabilities.

2) Development of Planning Process - Based on existing state structure for planning and concepts developed from consultants, staff, or literature, outline steps and procedures for developing a health manpower plan.

3) Identification of Future Requirements (develop planning inputs) - Utilize skills and knowledge of individuals (staff, consultants, advisory committee) to predict the future health care system, to establish criteria for manpower requirements, and to project supply and demand for manpower. Based on comparisons of current resources and future requirements, identify gaps for planning.

4) Establishment of goals and priorities - Identify goals for manpower status and health status, outline the philosophy about the respective role of public and private enterprise, and how to reach those goals, Order goals in terms of desirability and attainability.

5) Recommendations - Based on the current system, the future goals and the gaps, recommend action steps to achieve goals and priorities.

5) Implementation - Initiate recommended steps through established agencies and institutions.

Decision Structure Development Sequence - The decision structure sequence is a problem solving approach to development of inter-organization resources for health manpower decision-making. This is essentially a "boot-strapping" approach to planning development connected to decision issues as they arise.

1) Background information is compiled on planning and decision-making capability of pertinent actors in the state. The literature and outside consultants provide a set of concepts to consider when structures and processes are developed.

2) Beginning with issues of immediate concern, relationships with relevant organizations, and data gathering or analysis important to deal with the issue, are initiated.

3) As issues arise the system expands to fill in gaps in information and organizational linkages.

4) Periodically, the structure of the system is reviewed, and policies and priorities are adjusted to reflect the current realities.

5) Once sufficient resources, credibility and momentum have been gained, efforts to consolidate and coordinate data gathering and to refine research methods are incorporated into the decision-making process.

Political Development Sequence. The political sequence is aimed at developing a focus of resources and power in the health manpower decision system so that the big issues can be confronted.

1) Beginning with less controversial issues, credibility for planning and implementation is established by successful action.

2) Alliances are formed to take on new issues in expanded areas.

3) Information (data and methodologies) and fiscal resources are acquired through bargaining, annexation, or sharing existing sources.

4) Growing information processing capability is used to take on bigger issues and hence, to justify continuing support of the government or allies.

5) Continuing success enhances the credibility and size of the network. The growing power is consolidated and solidified through administrative and legislative ratification of authority.

Although most projects did not follow any pure sequence and some projects did not appear to have any logical strategy, these types helped to characterize the project approaches. The approach of the state depended on the resources available, the goals, and the emphases which have been described earlier.

Below, the sequences of the sample states are classified into four categories of strategies based on the observed patterns of sequences.

Foundations. Several states with low resources (Georgia, Mississippi and North Carolina) did not progress far enough in their projects to identify a sequence. The tasks were the first steps of sequences in information development and decision structure development. All took some steps to develop data and obtain background information on the decision system. North Carolina, the lowest cost project, limited its data gathering to primary care manpower, an issue of concern in the state.

Information Development. Five states followed the information sequence primarily, but none of the three took it to its conclusion. South Carolina, Arizona and Ohio worked principally on developing data requirements, and to a more limited extent, each also developed the background information and established relationships to embark on other sequences. Hawaii and Massachusetts worked on planning methods and attempted to develop elements of a planning process, including the development of goals and priorities. Although it investigated a range of methods, Hawaii had only a limited scope in its demonstration planning effort, and minimal connections among products were developed. Massachusetts also developed methods and performed studies of elements of a planning system which was not implemented.

Planning Development. Four states made primary use of the planning sequence with different emphases. Missouri and Nebraska used an information development sequence to obtain accurate data and analyses as a backup to their emphasis on producing a plan. South Dakota and Arkansas did not emphasize data or methods, but used elements of the decision structure development sequence to institutionalize their efforts. For example, South Dakota drew upon the previous Core Curriculum

Project for Nurses (and allied health) in their initial planning process for Nurse Manpower, an area of concern in the state. Both states ultimately took a very broad, comprehensive approach, paying particular attention to organizational relations, the planning process, and the development of the decision structure.

System Development - Five states focused development sequences on the decision system. The Maryland project changed directions in the middle with a new project director. Initially the decision structure sequence was used by examining a few issues and filling in data needs as the system evolved; later, the technical aspects were addressed in more detail and mechanisms for decision coordination were developed. Virginia evolved a well developed decision structure sequence based on the authority of the Council of Higher Education and the additional resources of a pre-linkage health manpower planning project. The linkage project enabled an additional step to be taken--refinement of methods and further coordination with key actors (SHPDA). New Jersey took a similar decision structure sequence, building on the Higher Education Agency authority and previous planning development. In addition to data and methods development, the linkage project enabled the agency to build political strength, adding to its alliances and credibility and establishing a role, through legislation, in the analysis of graduate medical education. Through subcontracts, Minnesota and Wisconsin had several simultaneous sequences in parallel. Each had some elements of political development, some decision structure development, and limited information development.

6.1.1.3 Assessment of Functional Development Strategies

The project sequences (information development, planning development, structure development, and political development) followed closely from the emphasis taken and, together, these two variables defined the overall strategy of the projects to build the functional elements of the planning and decision system. States that emphasized foundations did not progress into any of the developmental sequences and thus had a foundation strategy. States that emphasized either data coordination or methods entered information development sequences and thus were classified as having information strategies. States that emphasized research and planning coordination used either the planning development sequence or the decision structure sequence in their planning strategies. Finally, states that emphasized decision-making coordination and decision system refinement used combinations of structural development sequences and political development sequences with elements of planning and information development in their system development strategies.

To evaluate the four major strategic approaches, each approach is assessed in terms of the rankings of states using the strategy on project effectiveness and overall decision system effectiveness (from Chapter 4). The analysis reveals a strong tendency toward greater achievement with the planning and system development strategies and less overall achievement with the information and foundation strategies. Figure 6-1 displays the effectiveness rankings for each strategy. The strong correlation (gamma = .95) between the strategy and overall effectiveness supports the above conclusion, but the strength of this relationship is probably confounded somewhat by the fact that states started from different amounts of prior development and had different objectives. The relationship between strategy and project effectiveness measures (which are independent of the starting point) is also strong using three categories (high, medium, low) for grouping projects (gamma = .78).

A number of factors might have contributed to these results, including the starting points of the projects, the resources available to the project, the project leadership

Figure 6-1

LINKAGE STRATEGY EFFECTIVENESS

Strategy	Emphasis	States	Effectiveness Measures	
			Decision System	Project
Foundations	Foundations	Georgia	L	M
		Mississippi	L	L
		North Carolina	L	L
		Ohio	L	L
Information	Data Development or Coordination	Arizona	L	L
		South Carolina	M	H
	Methodological Development	Hawaii	L	L
		Massachusetts	L	M
Planning	Research Development and Coordination	Missouri	M	M
		Nebraska	M	L
	Planning Coordination	Arkansas	H	M
		South Dakota	H	H
System Development	Decision Making Coordination	Maryland	M	H
		Minnesota	H	H
		Wisconsin	H	H
	Decision System Refinement	New Jersey	H	H
		Virginia	H	M

and skill at implementing strategies, and the context for linkages. These factors are highlighted below.

Foundations. Several projects using the foundation strategy explicitly limited their approach because of limited financial or political resources. The Ohio project reduced its output to the foundation implicitly even though it had full funding and had taken prior initiative to obtain the contract. This project found that, after the state administration changed, the political environment was positively hostile to health planning.

In general, *the projects using foundation strategies did not progress beyond the groundwork efforts and the products were of little practical use*. Environments and other project characteristics which limited efforts to foundations also restricted the positive contribution of the projects.

Information. For a variety of reasons, several states pursued information strategies. These included location (in statistics agency), low resources, interest of project leadership, lack of power base, and lack of information.

Information development was the easiest task to implement, given adequate resources, because the methods were straightforward (at a basic level), skills could be recruited (usually), and political sensitivities were less threatened than for more direct intervention into decision-making. Information development was a way to increase political resources in the decision system where the agency had no prior resources. The big problem with the information strategy was difficulty in taking the important last steps of the sequence (actual impact on decisions and implementation) based only on technical expertise. *No state employing this as a leverage strategy got beyond the development of data gathering and planning methods*. One state (South Carolina) made some progress using this strategy relative to its limited resources. An attempt to use data as a leverage to coordinate among the users of data made some progress, but was not ultimately institutionalized.

The faulty assumption of the information strategy was that rationality of methods and data can prevail in decision-making. Two problems were: 1) methods for data gathering, projections, and need determination are far from perfect and have no prospect of ever becoming so highly accurate that they cannot be challenged by powerful interest groups, and 2) objectives are often conflicting and decision-makers have to make value judgments concerning trade-offs in objectives, which are not subject to rigid specification. Without some structure for interaction to incorporate the rational-technical aspects of decision-making into the already existing political mechanisms, the information strategy by itself was not able to succeed.

Planning. Two forms of planning development were pursued, one aimed at information, research, and development, and one aimed more at coordination of priorities and recommendations.

Spurred by the contract requirement, the *research approach* had many of the assumptions of the information strategy, but took it a step further by forming a temporary mechanism for incorporating critical value premises into the technical planning, and therefore building some credibility and support for implementation. *Decision systems were improved somewhat by the infusion of analysis into the political process*, but because of limited commitment of the decision-makers to the planning products during the process, the products became only one of a number of factors in the decision, if not a document on the shelf.

The *planning priority approach* de-emphasized the data and technical methods and sought to develop a first generation plan which, during the process, committed the policy-makers (somewhat) to carry out the decisions. Relying on existing data and rudimentary methods, the emphasis was on identifying problems and building support for their solution. Mechanisms were put into place to update methods and refine plans and direct continued development of the system structure. The success of this approach was partly due to the recognition that resistance to acceptance of planning recommendations usually was not a technical problem and therefore did not require technical solutions.

System Development. System strategies were aimed at improving decision-making for health manpower not only by improving the technical and planning inputs to decisions, but also by improving the structure and political process which used the plans to formulate and implement policy decisions. Depending on the starting point and somewhat on contract requirements, some of these strategies concentrated on refinement of methods to enhance the technical inputs into a previously initiated decision structure. These structures became fully institutionalized with help from the linkage project.

Other strategies emphasized the coordination of decision-makers to enhance political resources at the administrative level of state government. The planning structures fostered by the linkage projects provided an avenue for more deliberate rational decision-making than is generally possible in legislatures. Although these strategies went a long way to develop the system and improve decision-making, continued development required a greater focusing of technical resources to refine methods to diagnose problems and analyze alternative solutions for policy-makers.

6.1.2 Strategies for Incorporation of Substantive Health Manpower Policy Issues into the Decision System

The *scope* of the linkage project defined the strategic choice about which substantive policy issues should be addressed in the decision system and how new issues should be incorporated. The scope describes the breadth of health manpower issues addressed in the planning effort. The project could address manpower issues in broad or narrow *program areas* including entry level education programs, continuing education programs, recruitment, retention, and placement programs, licensing, or manpower utilization. Issues could be addressed in a broad or narrow range of *health occupations* which are trained at different levels of education (doctoral, masters, baccalaureate, associate and secondary) and operated in differing service modes (acute care, ambulatory care, rehabilitation, mental health). Issues and actors at differing *levels of decision-making* could be addressed including policy levels, management levels and service levels. A measure of the scope of the project is the number of levels, occupations, and program areas addressed by the project.

The scope of the project was an important strategic consideration for the health manpower planners because the approach taken had important implications for the concentration of resources (fiscal and political) available to accomplish any one task. A strategic choice had to be made, either implicitly or explicitly, about whether to concentrate effort on a narrower breadth of health manpower concerns (occupations, program areas) or to address a wide range of concerns in less depth. Along with the choice about which functional task emphasis to take (as described in the last section), the scope defined an array of strategic choices faced by the linkage project management about how to allocate resources. What follows is a description of the factors considered in selection of the occupational and program scope of issues that were addressed by the linkage system.

6.1.2.1 Occupational Categories

The project scope was defined principally in terms of the occupational categories addressed. Both the major health professions (MODVOPP and Nurses) and an array of allied health occupations were addressed by most of the projects. Few projects concerned themselves with related areas such as mental health manpower or environmental health manpower. The project had to decide on the number of occupational groups to include and the types of professionals which would most benefit from their planning efforts as described below.

Breadth of Occupations. Data availability often became the determining factor for the upper limit of the scope of the linkage project. The 13 occupational categories of the CHSS manpower component defined the scope in South Carolina, Arizona, and Maryland. Although Maryland did not have a CHSS manpower component, data development efforts in the linkage project were modeled after the CHSS. Some states took a broader perspective but were limited by data availability for licensed professions. Although data were limiting, they were not restrictive for most projects, which narrowed their scope for strategic purposes instead.

One of the key strategic decisions faced by projects was whether to address only a limited scope of occupations initially or to address the widest range possible. *In general, those projects focusing on data and comprehensive planning activities addressed a wide scope*. The logic apparently was that, once methods for data gathering and planning were developed, they could be easily applied to a wide range of occupations where data were available. States attempting to do comprehensive planning (i.e. New Jersey, Virginia, South Dakota, Arkansas, Nebraska, Missouri) necessarily took a broad view even if depth was sacrificed. The thinking demonstrated by states such as New Jersey and Virginia, which had some history of health manpower planning, was that future iterations would increase the depth of analysis in individual categories.

Projects more concerned with the impact on decision-making considered political factors as well as technical factors in their scope. One consideration was the set of relevant problems in the state. In order to attract the interest of high level decision-makers, the problems addressed and the analysis of those problems both had to be meaningful. A second consideration was whether the methods to analyze, and the approaches to solve, problems were available. The project had to assess its own skills and the ingenuity of policy-makers to attack the problems. Another consideration was the political resources to implement any recommendations, including agency authorities and the power of coalitions which could be formed for or against a solution proposed by the linkage system.

The strategies varied. New Jersey emphasized allied health and nursing initially. These were problem areas for education because of the rapid proliferation of programs and little basis to determine need. Emphasis was placed on refinement of projection methods to support such decisions as putting a cap on all new nursing programs. Given a solid rationale, this decision could be implemented by the Board of Higher Education. Later in the project, after credibility and group cohesiveness had been established, issues related to medical education were approached.

Minnesota had a similar strategy. Noting that major medical education decisions, such as state support for two new medical schools, had already been made, efforts were focused on allied health and nursing. Planning included the more highly trained professionals (e.g., ophthalmologists and optometrists) when generic categories of care (e.g. vision care) were approached.

Missouri narrowed its scope from the other direction. Doing manpower studies of all MODVOPP professions, auxiliary personnel were considered as they related to major professionals.

Wisconsin put heavy emphasis on medical education through a legislatively established committee to coordinate and plan for medical education with the two medical schools in the state. That vehicle gave impetus to address medical policy issues while other committees addressed allied health education, nursing education, and health personnel planning.

North Carolina, the smallest linkage project, focused its planning activities narrowly on primary care manpower (physicians and dentists), particularly on the designation of shortage areas.

In these examples, some of the strategic choices are exemplified. One choice is whether to address problems of physicians or other principal health professions, thereby facing possible strong private interest opposition, or to address fragmented, less established, but problematic issues in allied health. Other choices are on the comprehensiveness of efforts and the depth of analysis to be pursued.

Occupational Focus. A choice to address problem solving and decision-making issues for either allied health occupations, physicians, or nurses required coordinating with different sets of agencies and dealing with different methodological and political problems as described below.

Allied health personnel are trained in vocational schools, community colleges, and hospitals, as well as in the major university medical centers. One year certificate programs in secondary and vocational schools are usually operated by the State Department of Education and are thus independent of higher education planning. Most associate degree programs have shifted from hospitals to community colleges, but some hospital programs still remain and clinical training is still conducted in the patient care setting. The technical training at the A.D. level has been a growth area for education programs and manpower requirements because of the rapid growth of medical technology. The community college and vocational eduaction systems have been tied into higher education planning in some states either through direct reporting to the Board of Regents or through Coordinating Boards. In many states, they are quite independent so that decisions affecting the different levels of education are not necessarily synchronized. Some coordination between secondary education and associate degree education has been established in the vocational education planning required for the expenditure of Federal funds.

Also concerned with allied health are manpower agencies responsible for employment. Employment Security, CETA and other jobs programs view health care as one industry. In some states, these programs are tied closely to vocational training institutions. From the point of view of health planners, however, the treatment of the "health industry" by manpower agencies is generally not detailed enough for their planning needs.

In addition to the organizational complexities, substantive planning complexities arise for allied health. The maze of occupational groups and the proliferation of new groups have made definitions difficult. Even simple reliable counts are quite a complex undertaking. Problems have been compounded by the restrictions placed on utilization in the credentialling of different groups. Licensing at least has afforded planners an opportunity to keep track of the numbers of qualified personnel in each category.

The choice to address *physician manpower*, on the other hand, has presented fewer organizational complexities, but greater resistance to outside intervention. Medical education has been of central interest to the profession, and, other than incentives which increase the resources available to the profession, little outside interference has been accepted. Although the number of schools and students has grown dramatically (spurred by national policy) in the past decade, in most states, the education process has been limited to one or two major medical centers and their closely affiliated teaching hospitals in the community. These medical centers have been very powerful in their regions, and some have had a separate budget from the legislature. In areas with more than one medical center, coordination has been established among the different institutions to plan together. Private medical centers, mostly in eastern states and usually prestigious in stature, have added complexity to the planning and decision system because they often have seen themselves as serving a national or international clientele, and have been successful in remaining independent of local or state decisions. All of the states in the sample have increased their output of physicians, and several have been faced not only with the high cost of medical education, but with the increasing possibility of surpluses (greater charges on the care system) and high rates of migration of physicians.

Nurse planning has been an important issue for many of the states, and has frequently been addressed in a forum separate from the major linkage mechanisms in the state. Issues in nursing embody all the organizational complexities of allied health occupations plus additional issues surrounding levels of training and articulation between levels. Where nurses have been able to consolidate their interests, they have also been politically formidable in speaking to issues of credentials for mid-level practitioners who can fulfill the shortages of primary care in some areas. The large numbers of nursing programs and graduates in many of the states prompted more concerted efforts to do manpower and education planning. Linkage project resources supplemented on-going efforts in many states, and nurse planning was incorporated into the project in others. The combination of manpower and education planning considered items such as working conditions and wage rates, as well as educational production in computing the supply and demand for nurses. These concerted efforts to plan for nursing requirements prompted nursing leaders in some states to spell out their vision of roles for nurses in the future. Thus, even though the absolute number of nurses being trained may have been judged to be in excess of service need, different levels and types of training may still be in demand. The expected outcome of this more sophisticated planning effort was a reallocation of educational resources rather than a reduction of resources or a moratorium on new programs.

6.1.2.2 Program Scope

Although the scope of the project was defined principally in terms of the specific occupational categories addressed by the projects, the range of program areas incorporated into the decision system was also considered. Educational program production issues were stressed by most of the states, but different states emphasized interstate compacts, credentialling, recruitment, employment, and retention programs in their planning and decision-making. The projects were not concerned directly with the implementation of manpower programs, but only in building or strengthening the infra-structure to plan and coordinate the development of programs. Thus, increasing the program scope was usually accomplished through linkages of the projects to sectors and agencies which were already directly responsible for the programs.

Higher Education. Educational production of health manpower was a major program emphasis of all linkage projects. In the situation of rising demand for health care, increased Federal support for health manpower education, high student enrollments, and a reduction in the demand for other forms of higher education (notably teacher training), many states were adding significantly to their capacity to train health personnel. Projects directly in higher education agencies naturally placed major emphasis on questions of the need for and quality of new programs and existing programs, and the budget process to implement programs in the public institutions. In addition, most of the projects made an effort to coordinate not only with higher education departments but also with the private colleges, the community colleges, and the vocational education system which also trained health manpower. The health planning role in the determination of service needs for manpower was an important input for the program and system planning decisions of the educational sector.

A concurrent development in the states with respect to health manpower planning and linkages, especially as it related to the program scope of the project, was the development of Higher Education Planning Commissions. Although these agencies had all higher education as their responsibility, many states organized separate offices of health affairs. The purpose of the commissions was generally to coordinate and plan for disparate elements of the education system. With respect to health manpower, this often meant the coordination of educational activities in vocational/technical schools (which may overlap with vocational education in the secondary school system), community colleges, state colleges, state universities, private colleges and universities, and sometimes freestanding medical colleges.

The structure of the state's educational system, the relation between public and private health professions training, and the relation between basic and clinical education in health delivery institutions were important considerations for higher education planning and the linkage system. Educational programs lie at the core of professional interests and hence, in many states, education policy is dominated by professionals (especially more highly trained professionals such as physicians) and is relatively independent of higher education or university administration. The extent of authority of higher education agencies, the extent of planning development for health occupations, and the strength of connections between the service and education sectors at all levels, set the stage for the crucial planning linkage between education and health services. A complete analysis of the variations observed in the structure of the state's educational sector and its connections to the health service sector is beyond the scope of this report. However, one preliminary observation can be advanced; in states with strong, well coordinated educational planning for health occupations which *are relatively independent of the dominant professional interests, the linkage project had a broad educational scope of activity if it was either in the educational sector or closely linked to the educational planning agency.*

Interstate Planning. Although interstate planning for health professions education was prevalent, it was at most a minor concern of linkage projects or health manpower planning in general. States with smaller populations and fewer resources were not always able to mount their own training programs in every occupation because of the high program cost and the limited demand for service. For this reason, several states were engaged in interstate planning for regional schools of optometry. For example, Georgia, North Carolina and South Carolina, with the help of the Southern Regional Educational Board, were attempting to cooperatively establish a school at the Medical College of South Carolina. Also, Missouri was negotiating with neighboring states on a school in St. Louis. Although in South Carolina the decisions were made by higher education and university policy-makers, largely independent of health planning or linkage projects, the Missouri Linkage Project analysis of the need for optometrists was influential in the "go ahead" decision of the State Legislature. Veterinary Medical Schools were also the subject of regional planning.

States also utilized interstate contracts to reserve spaces for their residents in public or private schools out of the state. Planning for these contracts usually was the responsibility of the state higher education department, but health manpower planning helped guide the decisions. For example, in South Dakota, the linkage planning recommendations led to a reduction in the number of dental students supported out of state.

Most states were able to muster resources through tax revenues and Federal aid from the Veterans Administration, the Bureau of Health Manpower and the Office of Education to start new and additional schools on their own for a number of occupations, particularly medicine and nursing. The need for interstate planning of health manpower was thus quite limited. Furthermore, health planning of HSA's in bi-state areas was largely limited to local service planning and thus had little impact on health manpower planning between the states.

Credentialling. Although licensing, certification, and registration had a major impact on production and utilization of health manpower, these issues were beyond the scope of most planning and linkage efforts. Credentialling of health manpower was governed primarily by separate licensing boards for different occupations under the authority of state statutes as well as by professions through national and local associations. Planning input to credentialling decisions was, at most, testimony on a position in legislative hearings, but usually was non-existant. Data gathering was without question the primary connection of licensing and certification to the manpower planning system in most states.

The conduct of credentialling tasks in the state are important to the health manpower decision system in several ways. The license issued by the state is an entry ticket into the occupation for a new professional and it excludes non-qualified people from practice. Licensing gives the profession the legal basis to discipline its members and mechanisms to do so; the government obtains a source of revenue and the opportunity to obtain information from licensees. Certification and registration through associations, on the other hand, also provide legitimacy for the practitioner and a source of information for the association and the public.

The practice legislation which institutes credentialling requirements is also very important to the delivery of health services because it establishes a set of formal legal restrictions on the service tasks which can be performed by individual professionals. This can place severe limitations on options for service delivery or solutions to health manpower problems. For example, restrictions on practices of nurses or physicians assistants, which are found in many states, can hamper the capability to deliver primary care, dispense drugs, etc., in rural areas. For the most part, decisions about such credentialling were outside the planning and linkage systems and were decided in the political forum of the state legislature based on the power of narrow professional interest groups.

The implementation of practice legislation is administered by professional License Boards. The Boards are normally appointed by the Governor, but are closely tied to professional societies which make nominations. Each Board is concerned with licensing, relicensing and professional discipline. Some Boards, especially nursing boards, take a larger role, which often includes review of educational programs and participation in master planning efforts for nursing. Although many states have consolidated administrative functions of all the Boards, Boards operate independently with respect to policy, and the functions of the Boards have remained outside of the coordinated planning and linkage systems (except for data gathering).

An important exception to the predominance of competitive political considerations in credentialling is the unique credentialling program operated by the Minnesota Department of Health. The Omnibus Credentialling Act of 1976 moved all Licensing Boards to the Health Department for administrative purposes and established an administrative mechanism by which unregulated occupations could receive credentials. The administrative process develops recommendations about the need for regulation and the type of credential appropriate. Licensing decisions are brought back to the legislature, but registration is handled through an administrative process. The process is one in which generic categories (e.g. vision care) of allied health occupations are considered for credentials at one time rather than separately (e.g. for contact lens specialists, opticians' assistants, etc.). An Advisory Committee (one of the major linkage mechanisms in the state network) forms a special task force of all groups interested in the generic category (for vision care, 13 occupational groups participated, including ophthalmologists, optometrists, etc.) to recommend regulations to the Health Department. The process is often heated and very slow, and some groups have tried unsuccessfully to circumvent the process by going directly to the legislature (further delaying action). Nevertheless, this process has instituted more carefully planned consideration and coordination into an area always charged with professional interests and power politics.

Manpower Services. Primarily in the domain of professions, manpower services receive only limited attention from planning and linkage efforts. In addition to their influence on practice legislation and licensing and their self interest in any major health manpower legislation, professional societies provide many direct manpower services to members of the profession, including placement, continuing education, and collective bargaining. Some of these efforts have been supported by outside foundations or grants, and some are collaborative efforts among associations (e.g. medical and hospital). Most linkage projects have included representation from professional groups in any form of linkage mechanism. However, this is primarily to incorporate the professional judgment (expertise) and interests into planning and policy making for health manpower, not to incorporate professional manpower services into the planning process (some of the latter may have occurred as a secondary effect of the former).

Hawaii and Virginia were the only projects to place significant emphasis on continuing education issues. Working closely with four occupations (Nurses, Dieticians, Medical Technicians, Dental Hygienists) as a demonstration of planning technique, the Hawaii project was able to address a broad range of manpower issues, including continuing education.

Manpower services (recruitment, placement, employment) were also sponsored by the state or through Federal initiatives, but with varying amounts of coordination with private manpower services or the planning and linkage system. The most prevalent and often the only effort of HSA's in the area of manpower was the designation of shortage areas and the subsequent solicitation of Federal money through the Rural Health Initiative (RHI) or the National Health Service Corp (NHSC) programs to recruit primary care physicians. Operating in local areas through major medical centers, Area Health Education Centers (AHEC) have provided a core of resources to facilitate the practice of modern medicine in remote areas, and thus, in addition to their extensive training activities, they have been important recruitment magnets. Each of the aforementioned programs were of concern to the planning and decision system, but because of their direct program emphasis in communities and medical centers, they were usually one step removed from the state level planning.

On the state level, Department of Labor programs, such as Employment Security and CETA, were incorporated into the health manpower planning and linkage system of some states, usually for data and methodological purposes rather than program or policy. In states such as South Carolina and Hawaii, projection methods from the Bureau of Labor Statistics package were investigated for possible utilization for health manpower planning. After the linkage project, the Hawaii SHPDA subcontracted to the State Labor Department to refine its manpower projection methods in the health industry.

6.1.2.3 Assessment of Substantive Decision-Making Development Strategy

The strategies used by state linkage projects to incorporate broad or narrow scopes of substantive decision-making have been described in terms of the occupational focus for planning and linkage activity and the program areas for decision-making.

Evaluation of the substantive scope of the project strategy can only be considered in the context of the entire strategy of the project. Although the data in this study are not sufficiently well specified to fully analyze the distinctions in the scope of the strategy, several observations are specified below.

Linkage projects addressed a range of occupations in their planning and decision system development activites. The major emphasis was most often on physicians and nurses, but other health professionals (MODVOPP) and allied health occupations were frequently incorporated. Mental health professionals (e.g. psychology, social work), environment and public health (e.g. sanitation), and health administration and planning were frequently incorporated into initial development, but were generally incorporated more often in later development. Projects aimed at planning and data tasks necessarily addressed an occupational scope of activity as broadly as possible, usually limited by data availability. As has been discussed in Section 6.1.1, data and planning tasks were important for several of the strategies. In the context of the evaluation of strategies, we would therefore expect that, in the absence of structures and mechanisms to utilize a broad scope of data and plans, a comprehensive scope will not enhance the decision system. On the other hand, in the context of a basic structure for decision-making, more comprehensive planning not only will increase the quality of individual choices, but will also improve the credibility of the system.

Projects aimed at more political and organizational tasks started with a narrow scope of occupations. By addressing substantive problems and developing methods, the project was better equipped to take on problems requiring greater political resources. Projects most often started with nursing because this was a problem area which was not quite as complex as the allied health occupations and not as politically risky as physician decision-making.

The information to evaluate the program scope of the projects is limited. The clear focus of most of the projects was on health services planning and higher education planning. Depending on the location, the projects leaned one way or the other. There were only isolated instances of direct consideration of program areas such as credentialling (licensing, certification, registration), manpower services (recruitment, placement, personnel services). These other program areas are in the primary domains of professions and service providers, and thus were secondary considerations of health manpower planners. A complete linkage system would necessarily have to address a broad scope of occupations and services as well as interstate planning with neighboring states. The states which had developed the most effective decision systems were beginning to expand their fundamental educational-service planning linkages into broader program areas by achieving closer coordination with the existing professional/public organizations responsible for those areas.

6.2 Linkage Project Organization and Management

The strategy of the linkage project defined the steps and sequence for developing the analytical and organizational functions of a decision system and for incorporating substantive decision issues into the system. Depending on the strategy and context, implementation of a linkage system entailed different operational steps. This section describes and evaluates some of the important management factors which affected linkage project implementation in the states. First, the political resources available to implement the linkage strategy are evaluated in terms of the project location in state government. Then, approaches to allocation of project resources are assessed for both the organizational and technical planning tasks necessary to develop the health manpower decision system.

The scope of work for the linkage project outlined a set of tasks to be accomplished to fulfill the contract requirements and to achieve project goals. Even with modifications to contracts, many of the tasks were similar for all projects and entailed technical as well as organizational tasks. Technical tasks included such items as identification of data sources and planning activities, developing and implementing a computer based health manpower data system, and developing alternative health manpower requirement plans. Organization tasks included establishment of an advisory group and a linking mechanism which would coordinate technical planning with political decision making.

As will be described, organizational strategies were not only aimed at joining resources by interaction and exchange with existing organizations, but they were also directed toward creating symbolic resources to enhance the collaborative atmosphere for decision-making. For example, coordination with CHSS manpower efforts provided a reliable data base and connections to a whole network of data producers (e.g., professional associations), while extensive subcontracting attempted to create widespread identification with the goals of health manpower planning. Technical task management was aimed at creating analytically sound decision tools (e.g. data, plans) as well as increasing expertise and influence over decisions.

6.2.1 Project Location and Political Resources

The political resources available to the linkage projects were related to the planning, program, and policy authority of the contracting agency, and the connection of the agency to sources of information and other powerful public or private actors in their sector of program activity. For example, higher education planning agencies not only had significant program review authority for new programs, but they were closely related to the schools in the state which do manpower training. The importance of home agency political resources and the basis for those resources could not be underestimated because, without the backing of significant know-how or authority, it was less likely that others would be able to see that the benefit of cooperation in a linked system exceeded the cost of giving up autonomy to a coordinating mechanism. The political resources of linkage contractors varied according to the location in government of the project.

Figure 6-2 displays the location of the linkage contractors and major subcontractors, and indicates any major changes which occurred during the project. Although most projects were in Comprehensive Health Planning agencies, projects were also located in higher education agencies, budget and planning agencies, governors' offices, and health and human services departments. Program authority, access to information, visibility and constituency of the project agency, and hence, its political leverage, are at least partly determined by the sector (e.g., Education, Health Service) of government and the policy level in which the project operates. These factors are discussed below.

6.2.1.1 Sector Location

Health Services. Linkage contracts in health planning agencies were closely related to the health service providers in the state, and particularly after the moves described in Figure 6-2, most of the planning agencies became closely connected to the State Health Department. Prior to the implementation of P.L. 93-641, many health planning agencies had very little authority or leverage to conduct their planning and coordinating roles, but under the new legislation, the powers of the state agency were increased. A number of regulatory

Figure 6-2

LINKAGE PROJECT LOCATION

REGION/STATE	ORIGINAL CONTRACTING AGENCY	AGENCY REPORTS TO:	KEY SUBCONTRACTORS	CHANGE OF LOCATION
I. Massachusetts	Office of Comprehensive/Health Planning (CHP/SHPDA)	Secretary, Human Services	Secretary, Education Affairs Secretary, Manpower Affairs	OCHP moved to Dept. of Health
IX. New Jersey	Dept. of Higher Education	(Coordinating) Board of Higher Ed.		Data System Operation moved to Health Dept. (SHPDA)
III. Virginia	Virginia Council of Higher Education	Board of Higher Education (Coordinating Board)	Department of Health (SHPDA); University of Virginia	
III. Maryland	Md. Comp. Hlth. planning Agency (CHP/SHPDA)	Dept. Health & Mental Hygiene		
IV. Georgia	Health Planning Agency (CHP/SHPDA)	Dept. of Human Resources		SHPDA became freestanding/ Project moved to office of Vice Chancellor for Health, Board of Regents
IV. Mississippi	Ofc. of Federal/ State Programs	Office of the Governor		
IV. North Carolina	Health Planning Agcy. (CHP/SHPDA)	Dept. of Human Resources		
IV. South Carolina	Division of Health & Social Development	Office of the Governor		Office of Research and Statistics; Budget & Control Board
V. Minnesota	Higher Education Coordinating Board	Advisory Board to Governor & Legislature	Health Dept (licensing); State Planning Agency (SHPDA)	
V. Wisconsin	Div. of Health Policy & Planning (CHP'A' Agency)	Dept. of Admin. and Govenor	Bureau of Health Stat. (CHSS); Legislative Fiscal Bureau; Univ. Board of Regents	Div. of Health (SHPDA)/ Dept. of Health and Social Service
V. Ohio	Office of Health Planning (CHP/SHPDA)	Dept. of Health		
VI. Arkansas	Health Planning Agcy. (CHP/SHPDA)	Dept. of State Planning		Health Planning (SHPDA) moved to freestanding Agcy. in Health Dept. (Adm. purposes)
V. Missouri	Health Planning Agcy (CHP/SHPDA)	Division of Special Services/ Dept. of Social Services		
VII. Nebraska	Bureau Comprehensive Health Planning (CHP/SHPDA)	Department of Health	'B' Agencies; Univ. Nebraska	
VIII. South Dakota	Health Planning Agency (CHP/SHPDA)	Department of Health		
IX. Arizona	Bureau of Health Manpower/Health Plan & Resources Division (CHP/SHPDA)	Department of Health Services	Univ. of Arizona	
IX. Hawaii	School of Public Health	Univ. of Hawaii		At end responsibilities shifted to SHPDA (freestanding in Health Department)

functions aimed at health services, such as Certificate of Need (C/N) reviews, were attached to planning agencies. Also the coordination of Health Systems Agency planning, which was to be the basis for expenditures of Federal money in local areas, became the State Agency's responsibility. In the sample of Linkage Contractors located in Health Planning Agencies, most were well on their way to full designation. Thus, with the institutional authorities of the Health Department, such as facility licensing, and the coordination role of the State Health Coordinating Council (SHCC), this location provided a moderately strong institutional base.

In several states such as Ohio, Georgia, Missouri, Nebraska, and Mississippi, strong private interest groups and higher level government administration hampered the development of the Health Planning Agency and neutralized the authority of the Health Department. At the time of this study, Nebraska and Missouri had not enacted C/N legislation; Georgia had only recently established its SHPDA and had not appointed a SHCC; and Ohio was threatened with loss of designation. All of these states faced strong provider opposition to Health Department programs or any form of government intervention such that the Health Departments had little input to state policy. The weak institutional power base for the linkage project made it more difficult to engage in coordination and political organization tasks of the contract. As evidenced by the achievement of Missouri and Nebraska, technical task development was not hampered where the resources were sufficient to establish self-contained project teams.

The linkage contractors in health departments were usually located in close proximity to the Health Statistics Agencies, also in health departments, and to the development of health manpower data systems, especially the CHSS manpower component.

This close connection was an important source of information, expertise, and relationship building for most of the projects. The process of establishing reliable, consistent information for decision-making helped bridge the relationships of statisticians with occupational licensing boards and professional associations, the prime sources of data. South Carolina used the statistics agency as a basis for its limited resource project. The Maryland and New Jersey contracts helped set up state initiated data systems which were operated in the Health Department independent of the CHSS. The Minnesota, Wisconsin, Virginia and Massachusetts projects were closely connected to the statistics functions directly in the contracting agency or through subcontracting agreements. Note, even though the New Jersey, Virginia, and Minnesota projects were in Higher Education Agencies, strong connections were maintained with the data agencies. In Missouri, Nebraska, North Carolina and Arkansas, the data systems provided good support to the linkage contracts, but were independent divisions of the Health Department.

On the other hand, projects with poor data resources or poor connections of project to data resources had detrimental effects primarily on technical task development, but not on organizational tasks. Ohio, Hawaii, South Dakota and Georgia had no CHSS manpower systems, poor data resources, and were thus limited in their ability to plan. Arizona and Mississippi had CHSS, but the projects did not connect well with the data system. In Arizona, there was little cooperation between the linkage project and CHSS, which substantially undermined the data oriented linkage effort. South Dakota, and to a more limited extent, Hawaii, were able to establish a wide range of collaborative relationships in spite of the lack of data. Thus, *connection of linkage projects to data system development appears to have had positive impacts on the development of organizational tasks, as well as technical tasks, while lack of connection had a detrimental effect primarily on technical tasks*.

Education. Linkage projects in *Higher Education Departments* generally enjoyed a broader range of agency authority than those in Health Planning Departments. Higher Education Departments were the staff arms of the Boards of Higher Education or Boards of Regents in the states. The authorities of these agencies varied in states, but fell into two broad categories: Coordinating Boards and Governing Boards.

Governing Boards had the greatest powers, which might have included review and approval of new education programs in public institutions, audit of existing programs, allocation of budgets to state universities and colleges, and master planning for higher education. Examples of linkage projects in governing boards of the predominant educational institutions in their state were the Georgia project, which was taken over in its final days by the Board of Regents, and a subcontract of the Wisconsin project with the University Board of Regents.

Coordinating boards had more limited authority than governing boards. Most recommended budgets to the legislature and had some program review and approval authority. New Jersey, Virginia, and Minnesota had linkage projects associated with coordinating boards. In each of these states, the coordination authorities were an important foundation for the development of a linked decision system, but the combined powers of the system exceeded the authority of the board alone. Massachusetts had a key subcontract with a coordinating cabinet agency which had only limited power to review budgets of secondary education, vocational education, and higher education. The conflict between this agency and the Higher Education Board, which had program approval authority, hampered the linkage effort by giving no strong linkage point in the education sector.

Linkage projects located in *higher education institutions* (schools) were removed from the administrative authority of the educational system and relied primarily on their technical expertise for power. The Hawaii project was located in the School of Public Health, but its base of authority was from the Health and Social Welfare Education Council in the University. When the council was disbanded, the project had to reduce its goal to demonstration of planning techniques rather than its original goal of planning and decision system development. Similarly, the major subcontracts to the University of Arizona and the University of Nebraska provided little in the way of political resources for broad scale linkage activity among education or health service actors. *The location of the linkage project in the education sector thus appears to have had significant impact on organizational and political capabilities primarily when the project was attached to the administrative authority for program and budgets rather than relying upon the technical expertise of individual faculties as a power base.*

Policy/Finance. Linkage projects were also located in the policy/finance sector of state government, usually in close proximity to the governor. Governors who took special interest in issues of health care or who tried to develop mechanisms of coordination among agencies influenced the placement of the project in the Governor's Office, or administratively in the State Planning or Budget Department. Some of these projects were combined originally with such initiatives as CHP. In this location, the project enjoyed the political authority, but had no close program connection and had to had to endure the winds of political change. In Mississippi and South Carolina, the governors had limited power, and the linkage project was a way to investigate coordination of Health Manpower Planning. The South Carolina project moved later to the Budget and Control Board where it still was in neutral territory with respect to the sectors of government concerned with health manpower.

In summary, the sector location of the project (health service, education, manpower service, policy/finance) was associated primarily with the kinds of administrative authority, political coalitions and information sources which were readily available to the project. Educational locations often afforded significant budget and program authority as well as connections to university actors and educational information. Health locations meant regulatory power, connection to providers and local health planners, and access to service information. Policy locations meant budget powers and access to financial information and political decision-makers (legislature). Figure 6-3 lists the sources of leverage available to agencies in the health manpower system. As indicated on the chart, most of the actors in the system have more than one leverage source, and most sources are available to more than one actor. The fact that leverage (power) is distributed throughout the network of agencies in the system is the reason for establishing linkages. Any one agency can increase its leverage by linking to agencies with direct access to the leverage sources or by establishing its own means to use the sources (the former is usually more readily attained).

6.2.1.2 Level

The level in the policy hierarchy of the state also affected the ability of the project to link planning with resource allocation decisions and the ability to coordinate either planning or implementation efforts among peer agencies. A project which had access to policy decision forums could affect resource allocation, and one which had access to data and technical planning could provide intelligent input to decisions.

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Figure 6-3

LEVERAGE SOURCES IN LINKAGE NETWORK

Leverage Source	Usual Agency Location
• Administrative Authority	
- Approval of new education programs	- Higher Education Administration or Coordination Agency
- Audit of existing programs	- Higher Education Agency
- Budget review or approval for education for health services (public institutions)	- Higher Education Agency Health Department
- Regulation of service costs and quality	- Health Department; private Professional Organizations
- Review of Federal expenditures	- HSA's; Vocational Education Planning
- Licensing and Registration	- Licensing Boards
• Political Coalitions	
- Connection to service providers (i.e. hospitals, nursing homes)	- Health Department; Health Planning Agencies
- Connection to professionals	- Licensing Boards; Health Agencies
- Connection to schools	- Higher Education Department; Vocational Education Department
• Access to Information and Policy Making	
- Health services	- Health Department
- Manpower services and professional practice	- Licensing Boards; Professional Associations
- Education production	- Higher Education; Vocational Education; Private Schools
• Technical Expertise	
- Data Systems	- Health Statistics Agencies
- Manpower Planning methods	- Health Planning Agencies; Education Planning Agencies; University
• Other	
- Discretionary funds for manpower planning and decision making	- Planning Agencies; Service Agencies; University; State Legislature
- Legitimacy to engage in manpower planning or influence manpower decisions based on history and/or formal authority	- Higher Education; Health Planning; Professional Association; Licensing Board

To be a focus for coordination, the project had to be able to relate to public and private actors in the education, health services and health manpower employment sectors, and it had to be perceived as having no bias toward any one group. As has been described, the linkage projects were located in a range of policy levels of the government. Access to decision-making, and the political visibility/vulnerability of location on different levels are outlined below.

- Governor's Office: High level policy visibility and authority; subject to political pressures and change in democratic process.
- State Department of Administration or Planning: Governor's Administrative Agency; access to high level policy, budget decisions; protected somewhat from political visibility and change; negotiated access to program data and analysis relating to manpower programs.
- Cabinet Level Agency: Coordination and executive policy agency for one sector of manpower services (Health and Social Service delivery, Education, Employment or Credentials); access to high level decision-making in one sector and above; somewhat protected from political visibility and change; access to the range of analysis and data on specific programs in one sector.
- Staff to Cabinet Agency: Access to policy in one sector; moderate access to highest level policy making; protected from political visibility and volatility; direct access to analysis and data on specific programs in laterally related departments in one sector.
- Arm of Service Department: Administrative and program operation agency (e.g., Health Department, University); limited access to policy-making; high degree of protection from political change; ability to develop ongoing technical skills and program specific expertise; first hand knowledge and access to data and analysis in program areas.

Assessment of the level of a project is related to the degree of aggregation of data and decisions and the technical expertise which was available at each level. Higher level decision-makers dealt with more general information, and had broader authority. Higher level projects enjoyed greater neutrality with respect to competing organizations within a sector or between competing sectors. Lower level organizations generally had more specific, but more narrow technical expertise to gather data or carry out planning. The lower level organization had limited access to or influence on political decisions. An important factor in the location of the project was how the trade-off was made between the needs for specific technical information and expertise found at lower levels, and neutrality and policy access found at higher levels.

6.2.1.3 Assessment of Project Location and Resources to Implement Linkages

Analysis of the location of the sample linkage projects yields only suggestive conclusions concerning the sector and level appropriate for initiation of linkage development. Of the seven projects with the prime contractor or a major subcontractor in the educational sector, four of five associated with higher education administration and planning were among the most effective decision systems, while the two located in university settings were among the least effective systems. In the more effective systems, the education agencies had several advantages: they had a neutral location with respect to individual schools; and they had extensive administrative authority and connection to all sector resources. Projects located in health planning agencies in health departments, those in health planning agencies in higher (policy) level departments or freestanding, and those in policy/finance agencies were more equally distributed along the dimension of effectiveness. Most of the health planning agencies did not have a great deal of authority prior to PL 93-641, while projects in the high policy positions (e.g. governor's office) suffered from instability and changes of priorities during political transitions. Projects at lower technical levels of bureaucracy or universities were less effective because they had limited access to real decision-making, and ran the risk of conflict with technical resources in other agencies if they emphasized technical planning.

It appears that, because of the stable and generally growing authorities of higher education boards, these projects had an advantage in facilitating planning and linkage systems. Projects in health planning agencies did not have the stable authority initially, and in fact, the transition to the new health planning structure of PL 93-641 was disruptive for many projects. With a stable structure in place with significant authority and responsibility for health manpower concerns, however, SHPDA's are well positioned to develop linkage mechanisms in the future. In sum, it is not the location per se, but the political resources related to a specific sector and level which are important for linkage system development.

Although a number of factors determined the leverage available to a project, the proximity of a project to administrative authority, to political coalitions, to information, or to technical expertise was important to its ability to manipulate incentives to encourage coordination among decision-makers. Projects that did not have a location close to significant leverage points in the decision system were not able to threaten the status quo enough to encourage collaboration among the relatively independent decision-makers. Although in many instances the projects were able to recruit representation from the principal organizations in the state health manpower decision system, the representatives did not commit their organizations to implementation of decisions in the absence of leverage by the project leadership to create incentives for cooperation.

Political resources tended to be bound by the history, traditions, and perceived legitimacy of a state agency or private organization to plan for or influence health manpower decisions. Resources, such as political coalitions, access to information, and even formal authorities were particularly attached to entrenched patterns of interaction and decision-making. As such, the decision systems exhibited a high degree of stability in their structures which favored the status quo. While such stability had the advantage of creating a more certain environment for health manpower decisions, it created formidable obstacles to change and improvement. Projects that were initially located outside the power structure had to achieve a legitimate foothold in the decision-system in order to gain any of the necessary political resources. Going across sectors to gain resources associated with decision-making access or political coalitions was a delicate painstaking process of relationship building. For example, health planning agencies were not often well connected to educational institutions and had to develop relationships with educational planners to bridge the gap. Such processes often took years of careful cultivation to become solidified. This was an important reason why the linkage projects trying to impact upon decision making required a minimum of three to four years to develop and refine the process in linkage mechanisms.

On the other hand, technical resources, such as planning expertise, made an important contribution to political resources, but the purely technical aspects of planning and decision-making were less dependent on location than were political resources. No matter which location, projects with sufficient funding were able to recruit self contained technical staffs with the necessary skills to accomplish the fundamental technical planning and/or data gathering tasks. In addition, most projects had to rely on outside technical resources to pursue a minimum level of planning development. The outside resources included both data gathering though CHSS or state developed systems, and technical expertise through consultants or advisory group members. Regardless of sector location, the projects were generally able to purchase this expertise or obtain it without charge by cooperative or voluntary arrangements (as seen for education sector projects). Projects located on the technical level had the most difficulty connecting to existing technical resources because they were seen as a threat to the technical role of the established agencies rather than users of a service (e.g., Arizona, Hawaii).

Since the political resources necessary to establish linkage mechanisms were usually located in several sectors and the technical resources could be developed, purchased, or readily linked to agencies at a higher policy level, the best location for initiation of planning and linkage mechanisms was not the same for all states.

6.2.2 Project Organization and Identity

The way in which the linkage contractor organized its resources and the resulting identity developed by the project were important to the ability of the project to highlight the objectives of health manpower planning within a context of competing and cross cutting objectives. The identity developed by the project determined to some extent how it could use its position (leverage) and resources, and how it could relate to the resources and objectives of other organizations in the system. Resources could be devoted to the establishment of a separate project identity, or resources could be allocated more broadly either to support the home agency responsibilities or to enhance the collective health manpower responsiblities of a wider group of coordinated agencies.

The project had a strategic choice whether to allocate resources toward broad objectives and a wider identity of the system for health manpower policy, or whether to allocate resources more narrowly to enhance the identity of the home agency or the linkage project. Although this choice was not always consciously made, the effect was implicit in the project staff organization, the integration of the project with the home agency, the continuity of the staff and the project visibility. Each of these variables is characterized below, followed by an assessment of the different identities available for linkage projects.

6.2.2.1 Organizational Factors in Linkage Strategy Implementation

Staff Organization. Most states had a central staff, but several projects decentralized resources through subcontracts. Where the subcontracts were primarily for coordination and linkage (Minnesota, Massachusetts, Wisconsin, Virginia), the effect was to broaden the objectives of the project to those of the state government (the linkage subcontracts were only with government agencies). The project identity itself was shifted to the group of interacting agencies. To the extent that the subcontracting agencies were able to coordinate among themselves, the new health manpower objectives of the bureaucracy became a formidable force in the system of decision-making. Using different mechanisms (such as overlapping staffs and interagency task forces as will be described in Section 6.3), Wisconsin, Virginia, and Minnesota achieved coordination among the subcontracting agencies, and thus significantly developed their health manpower decision-systems.

Massachusetts had more difficulty coordinating three cabinet offices so the process became diffuse. In Massachusetts, the political power of the cabinet offices was limited because all program and regulatory authority was vested in the separate agencies in each sector. Coordination among the three linkage contractors was primarily for the purpose of identifying the separate role of each subcontract and dividing resources accordingly. Each subcontracting agency aimed its resources at developing its own separate identity to address health manpower issues. Junior staff were hired whose major loyalty was to the agency so that staff level interaction was circumscribed. Even so, the project produced some tangible conceptual materials with limited resources, and added to the Health Planning Agency's growing influence. When a new governor de-emphasized the cabinet concept, the Health Planning Agency which managed the project found little to link to in the other sectors and lacked authority or credibility in those sectors. With no stable policy structure and a staff separated into disparate agencies, both the technical as well as organizational achievements were limited.

Project Integration. Projects had a strategic management choice, whether to integrate the project functions and staff positions into the home agency (e.g. as an office for health manpower planning) or separate the project and establish a separate identity. All projects using subcontracts for linkage purposes integrated the project supported staff portions into each subcontracting agency. In most instances, the positions were made permanent and gave the agency on-going capability to do health manpower planning and analysis. Usually, at least one staff member in the subcontracting agency was a senior analyst with sufficient skill and experience to not only establish strong professionally based links between agencies, but also to influence the agency's internal planning and policy making when addressing health manpower issues. Subcontracts which were established to obtain technical expertise (e.g., Arizona, Nebraska) did not institute new positions, but merely drew upon existing resources (faculty expertise) on a temporary basis.

Projects with staff centrally located in a single agency also had a choice of establishing a separate identity or building the contract capability into the home agency. Integration of contract functions into the agency implied an on-going commitment of the agency to health manpower planning. The contract was seen as seed money to help develop permanent capability and reputation for the agency. New Jersey, Maryland, Arkansas and Nebraska built manpower planning and analysis units into the linkage contract agency. Although Nebraska had subcontracts, the resources of the project were sufficiently large to develop a health manpower planning team. In contrast, Arizona subcontracted the entire technical portion to the University of Arizona, and although the health department integrated the administration of the project into its health manpower bureau, no on-going planning capabilities were developed. Both North Carolina and Mississippi integrated the linkage project into the home agency (SHPDA and Governor's Office), but resources were small so the single staff person in both states was occupied primarily with assessing the potential for doing health manpower planning and linkage.

Other projects kept the contract functions separate from the home agency. Ohio, Missouri, South Dakota and Georgia established separate units in the Health Planning Agency to carry out project functions. At the end of the project, the units ceased to operate, but some of the staff moved into agency positions. Although officially in the State Health Planning Agency, South Dakota's project was also connected to the single HSA (the project director was HSA director); as a separate unit of the Health Department, the project could more easily negotiate between the two sometimes conflicting agencies. As a university based project, Hawaii used the school as a technical resource and an administrative base, but directed its efforts to outside agencies from a separate unit.

The South Carolina project was in a separate unit in the Budget and Control Board, but its activities were closely tied to the CHSS contract in the state.

Staff Continuity. Continuity of staff was important for project management because it strengthened the identity and aided in the consistent implementation of strategies both during and after the project. Although the movement of personnel in and out of the project is not totally under the control of management, personnel policy with respect to hiring, promotions and transfers as well as the individual style of management had an important impact on the continuity of staff. In the states studied, the structural integration of staff and commitment of the agency to the project was important for the continuing implementation of project goals after the contract. During the contract, the continuity of staff varied according to individual differences.

A severe problem for several projects in more remote areas was the recruitment of qualified staff to direct planning and linkage efforts. Arkansas had some initial difficulty in recruiting, and South Dakota had to have a Federal employee assigned to the project for two years. Most of the projects did acquire appropriate skills, and many new hires remained in planning positions in the state after the project terminated.

Project Visibility. Visibility was important to some projects by highlighting the goals and contributing to both the credibility of the linkage concept and the political resources of the project. For example, South Dakota distributed project reports widely with the linkage logo displayed prominently. The project had numerous meetings and wide representation which were identified as project activities. Missouri also distributed planning documents widely and held a statewide Governor's Conference to raise awareness of the problems in the state. Arkansas and Georgia also held statewide conferences. Many states used devices such as press releases, newsletters, logos, wide distribution of reports, conferences and dissemination seminars to raise the visibility of their manpower problems. For the most part, the project itself had relatively low visibility, and the publicity was attached to the home agency where it might contribute to on-going efforts in the area of health manpower.

6.2.2.3 Assessment of Linkage System Organization and Identity

The identity of the linkage project effort was a significant strategic factor in project management because the approach to allocation of resources to achieve a particular identity within the state health manpower decision system was closely related to acquisition of important symbolic political resources for planning and linkage development. Based on resource allocation choices about the continuity and organization of the staff, the integration of the project with the home agency, and the visibility of the project, three choices were available to project leaders as evaluated below.

Project Identity. Resources were allocated to give the project an identity separate from the home agency or agencies. Only South Dakota made an effort to develop a strong project identity, but Missouri and Hawaii developed a moderately strong project identity with strong connection to the State Health Planning Agency and the School of Public Health, respectively. The "project identity" was characterized by a central, self-contained staff, which held temporary positions in the home agency (although they may have been transferred to permanent positions at the end of the project). The staff occupied offices which were physically distinct from the home agency in separate quarters. Efforts were made to enhance the visibility of the project by news releases, visible project logos on widely distributed reports or letterheads, or through conferences.

Development of a strong project identity increased the visibility and credibility of the project process and created an awareness and demand for planning products. The strength of the identity was therefore important to the development of essential political resources. Allocation of resources to develop the project identity was the easiest identity to achieve because there was control over significant funding, sufficient to accomplish technical and public relations tasks. Development of project identity, however, risked the loss of institutionalization of the planning and linkage efforts because the identity tended to disappear at the end of the project.

South Dakota was in a difficult situation with its project director located in the single state HSA and the project located in the State Health Planning Agency. Because the State Agency generally took a narrow perspective, the strategy was to develop a separate identity and to shift the effort to the HSA for continuation.

Agency Identity. Linkage resources were allocated in the name of the home agency (prime contractor) in order to develop or strengthen the agency's identification with health manpower decisions. Most of the states in the sample directed efforts toward development of "agency identity" in the health manpower decision system. The strategy (explicit or implicit) was to increase political resources of the agency to influence planning and linkage capability and, therefore, improve the decision system.

Allocating project resources to the enhancement of technical expertise in data gathering or planning methods provided agencies, which had no previous health manpower experience, with a bargaining chip to contribute and link to agencies with greater authority and involvement in the decisions. This was particularly true for CHP agencies that were trying to establish relations with higher education agencies. Agencies which already had experience and authority could use their resources to supplement that leverage with data and technical backup. Project resources were also allocated to help build political coalitions by providing services or subcontracting small amounts to potential allies. Less tangibly, the fact of having the contract increased legitimacy of the agency to operate in the health manpower arena, and thus opened doors for information and the sharing of resources in coalitions.

Three types of agency identities were observed:

1) Temporary - A temporary project group within the contracting agency was established in a number of states (Mississippi, Georgia, Ohio, Arizona, Missouri, and Hawaii). Although the products of the projects were identified with the contractor (subcontractor in Arizona), there was a distinct project orientation and often a separate unit which ceased activity at the end of the project. The majority of the staff left the agency, and the functions were largely not institutionalized. In this arrangement, the contractor benefited from the visibility of the project, but the commitment and project structure were not significantly strong to follow up the activity and build the decision system.

2) Start up - Several projects structured their efforts as an initiation of future involvement in health manpower planning and decision-making. These projects integrated the activity into the identity and functioning of the home agency by utilizing the project funds to support permanent health manpower planning positions in the agency. Following the project, some of the functions were continued. For a variety of reasons, however, including the low magnitude of resources, many of these efforts were not very successful in making significant progress toward improvement of the decision system.

3) Build on established base - Projects in New Jersey, Virginia and, to a lesser extent, Arkansas, had some previous identity in the health manpower decision system. New Jersey

and Virginia particularly had authority in the higher education system as well as some initial planning expertise. Project funds were allocated to build on the base by improving technical methods, by expanding the scope of linkage activity, and in some cases, by entering into more policy-making functions. These projects developed institutionalized and centralized networks with considerable impact on the development of decision-making systems.

In its most successful examples, "agency identification" contributed to the development of a centralized network. Although further research is needed to determine the effectiveness of centralized versus decentralized networks, some observations are possible. In situations where there was a previous vacuum or pre-established legitimacy, this network could function efficiently. Two potential hazards, however, were: 1) the possible narrow sector orientation that the linkage agency might have and 2) the potential conflict which might arise if another powerful agency had responsibility for similar aspects of the health manpower decision system.

For example, a contractor in the education sector naturally has ties to educational aspirations. Even though linkages to health planners connect the agency to the service requirements, educational dominance can tilt decisions toward education more than is desirable. On the other hand, if the health planners also see health manpower as a mandate, destructive competition is a possibility. More balanced planning input in a "system identity" as a way out of this dilemma of central planning was pursued by some states as is described below.

System Identity. Three states (Minnesota, Wisconsin, Massachusetts) used extensive subcontracting aimed at developing a system identity. Rather than focus resources narrowly to enhance a part of the system, resources were distributed to key agencies to foster coordination, and joint planning and decision-making. Each staff person was fully integrated into his home agency, but the linkage contract itself, and linkage mechanisms which continued beyond the contract, served to coordinate and balance system activity. Resources were used to enhance separate agency products and visibility, while some symbolic mechanisms (e.g., letterheads, logos) were used to maintain some sense of cohesion.

The strategy to develop a system (or subsystem of core agencies) identity had potential payoffs for long-run cooperation by emphasizing the common objectives of partners. Linkage funding highlighted the incentives for cooperation in two of the states. This strategy, however, was difficult to implement successfully because each agency had to be secure in its own identity to fully participate. In Massachusetts, the subcontracting agencies had weak positions in their sectors initially; the linkage activity was primarily for the purpose of dividing resources to achieve separate objectives, and no core linkage mechanism was developed.

Although it is hard to achieve, some level of system identity was necessary for coordination of actions of decision-makers. In order to achieve a system identity, agency and sector roles and identities had to be worked out first. Therefore, few linkage strategies were able to take the system approach.

5.2.3 Technical Task Management

The development of technical tasks was strategically important to the development of the planning and linkage system as one of several political resources available to a project for enhancing decision-making. The management of technical tasks, however, sometimes had different requirements than did the wider organizational tasks. Resource allocation strategies had to match both technical and organizational task requirements. The choices available to projects are evaluated below, based on the resources available, the staffing pattern and the technical emphasis of the project.

Project resources were devoted largely to the hiring of technical staff and consultants. Most of the project operated in the range of $80 thousand to $125 thousand per year for two to four years, but several in Region IV operated in the range of $25 to $50 thousand per year. All of the low resource projects had to modify their scope of work, and a number of the higher resource projects also had modified scopes of work. Because the modified scope of work generally had a thrust similar to the standard scope, the type of contract did not greatly affect the choices about how to organize and allocate resources. The exceptions were the projects in Region VII which had scopes of work emphasizing technical planning rather than linkage in the allocation of resources. Regardless of the type of contract, several states elected to allocate resources to staff in subcontracting agencies to help foster the linkage between agencies.

Core Staffing. Even with wide variations in the context and approach of the project, the staffing pattern for technical tasks was quite consistent. Relatively high achievement of technical planning tasks is notable in projects with both full funding (about $100 thousand per year) and a centralized core staff, while less technical progress was attained in the lower funded projects or those which subcontracted extensively. Based on preliminary analysis, several observations can be postulated concerning the makeup of technical staff.

- A multi-disciplinary staff of at least 3-5 planners is important for technical achievement
- Skill areas of project team:
    - Research Methods - economics, statistics, operations research, sociology, political science, education
    - Computer and information system skills
    - Planning, management, and organizational development skills
- Balance in the level of skill and experience is important for efficient utilization of talent. A senior

researcher (Ph.D. or equivalent), one to two intermediate analysts in different skill areas, and one or two research assistants is an appropriate mix.

- A project team with a critical mass of individuals working in close physical proximity (i.e. the same office) is important for advancement of the technical state-of-the-art.
- Expert consultants for specific technical problems are helpful for tasks, such as projection methods, information system development, or strategy development.
- Supplemental skills and efforts were also useful to the projects. Projects were able to obtain substantial technical skills from home agencies and outside agencies, such as planning agencies, higher education agencies, health statistics agencies, employment security or other manpower agencies. Members of advisory groups and study committees provided significant technical expertise, often at no cost. State and private universities were a source of expertise through faculty and students. Several projects used student interns in areas, such as public administration, and found they could also establish consultation relations with faculty.

In fully funded projects, a balanced staff of four or five, plus consultants and overhead, would account for almost all of the costs of about $100 thousand per year. Fully funded projects could address a variety of tasks, including the more technically difficult tasks, such as manpower supply projections, by using a centralized, self-contained project staff. An important advantage for states with linkage projects was the funding earmarked for health manpower planning. States and planning agencies which might otherwise not devote significant resources to health manpower planning could assemble a staff of sufficient size and diversity, and focus their efforts to make significant gains in technical manpower planning. New Jersey, Virginia, Arkansas, Missouri and South Dakota are examples of such technical achievement. For example, in New Jersey, a Ph.D. economist was hired to lead a technical staff of four, with backgrounds in planning and quantitative methods. The staff, funded by the linkage contract, built on the previous development of master planning and data development, by refining projection methodologies, and by expanding and operationalizing on-going data systems.

Low Resource Projects. Projects with $25 thousand to $50 thousand per year had too few resources to hire a core staff, and thus were restricted in their technical achievement. The only way that a low resource project could make technical progress was by close association with other technical developments (e.g. CHSS) in the state. This strategy, i.e., to link to existing technical resources, was a viable one if the resources existed and if there was complementarity of objectives between the linkage project and the outside agency.

South Carolina combined its linkage project with several CHSS components, and was able to support four staff: three research assistants/analysts and the director. With such restricted resources, primary data activities were addressed by the technical staff. In combination with the CHSS base of support, the director (and some of the staff) were able to make a contribution to planning development by using education and manpower data to begin to build bridges between health planners and education planners. Thus, by focusing effort on the more technically feasible task of data gathering and by combining resources with existing capability, progress was made.

A necessary prerequisite for obtaining technical resources via linkage activity was clear differentiation of technical roles in cooperating agencies. Although it was not a low resource project, the technical effort of the Arizona project was totally undermined by a lack of cooperation from the CHSS agency which performed a similar mission.

Technical Subcontracting. Several projects (Arizona, New Jersey, Virginia) subcontracted small portions of the work to gain expertise. The subcontracts were small enough in size that a core staff and center of gravity could still be maintained in the home agency. The exception was Arizona, which subcontracted the entire technical task to a core staff at the

University, physically and organizationally separate from the prime contractor. In projects with the center of gravity and core staff closely connected to the administrative authority of the home agency and hence, to the decision system, the result of technical subcontracting was to improve the technical achievement without diluting political resources of the home agency.

Linkage Subcontracting. Several projects subcontracted to facilitate linkages among core agencies. The more technically oriented of these projects made more limited use of this mechanism by supporting staff in other agencies to encourage coordinated input to planning, while still maintaining a core staff in the home agency. Other projects split resources more evenly among partners. The bonds between agencies were enhanced, but by dividing staff into separate agencies with different priorities, technical achievement was diluted.

For example, the Wisconsin State Health Planning Agency (prime contractor) subcontracted data and methodological development responsibilities to the Bureau of Health Statistics, education program planning and review to the State University System, and development of linkage mechanisms to the Legislative Fiscal Bureau. Furthermore, the staff of the subcontracting agencies shared responsibility for providing planning and analytical input to three policy coordinating committees of the state which were all concerned with health manpower. The committees coordinated policy for education and health planning, and made recommendations on budget allocation decisions, while the staff coordinated planning input to the process. By having the staff concern itself with such a wide range of policy issues and by separating their talents, the development of planning methods and plans was not emphasized.

Minnesota and Massachusetts had similar concepts in their arrangements, but different approaches to coordination of agencies

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which will be discussed in a later section. New Jersey, Virginia and Nebraska, primarily technically oriented projects, made limited use of this "linkage" subcontracting by supporting health manpower planning activities in the Virginia and New Jersey Departments of Health (SHPDA and CHSS, respectively) and in the Nebraska CHP 'B' agencies.

Technical Management. The management of technical tasks (obtain data, determine manpower needs, etc.) of linkage projects generally followed current management practices, such as management by objective, to define work plans for tasks and subtasks, and to sequence activities to meet schedules in a timely way. Individuals with necessary skills to achieve technical objectives were hired and organized into a functioning team to address the logical sequence of tasks. Although not all projects opted to emphasize technical task development, most projects had sufficient resources to develop self-contained project teams for high achievement of technical tasks, so the organization and management were straightforward. Except for projects in the lowest cost range and projects that used extensive subcontracts, the staffing and management were quite consistent among projects. Technical tasks could be prespecified, costed and programmed to attain technical objectives within the state-of-the-art. Indeed, the state-of-the-art of health manpower planning techniques was rudimentary so that many projects were not fully satisfied with their technical achievements, or even worse, the policy decision-makers sometimes would not accept the results. Thus, several projects worked on improving the data that were available. The difficult methodological problems, however, could be anticipated by astute project management and controlled to some extent or limited by resource constraints. As has been discussed, the problem of non-acceptance could usually be overcome more readily by non-technical means than by technical development.

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In summary, this section has identified several important aspects of the implementation of a linkage development strategy. First, political resources associated with the location of the project are explicated, and the assets and liabilities for linkage development at different sectors and levels in the decision system are assessed. The allocation of the project resources for organizational development (staff organization and continuity, project visibility and integration in system) is analyzed in terms of the unique identities developed for organizations in the health manpower decision system. Several patterns of identities observed in linkage states are assessed, including project identity, agency identity and system identity. Finally, the allocation of resources to achieve technical tasks is discussed, including core staffing (for well funded projects), technical subcontracting, linkage subcontracting, and low resource projects.

The successful implementation of a linkage strategy had to assure consistency in the management factors presented here. The level of political resources and leverage on the system had to match the identity building goals of the projects and the technical task management. Depending on the stage of development of the system and the appropriate resource allocation, emphasis varied. For example, even though ultimate goals were broad, agencies with few political or technical resources initially had to allocate their resources more narrowly to gain a foothold in the political decision process. In addition, a number of states with strong health and education planning agencies successfully employed a linkage subcontracting strategy to coordinate among a core group of agencies. While this strategy enhances planning and system development, it dilutes research and methodological development which require a centralized technical staff. A solution to this apparent dilemma of conflicting task requirements is found in the sequence of development. The more successful projects created a first generation of planning with heavy emphasis on establishing cooperative relations among influential health manpower actors and little emphasis on technical elegance. Later, seed-money was sought to form the core staff necessary to develop more refined methods. The same core resources could be attained by pooling of existing resources. No matter what the source of support, a concept of the strategy and consistent sequence of implementing linkage systems were important for success.

6.3 Linkage Mechanisms

The prime objective of the linkage program was the development of a planning system which would improve health manpower decision-making. In addition to developing planning methods, the key means to this goal was the establishment of interorganizational relations among public and private agencies which influence different aspects of decision-making, especially planning, resource allocation and program development. The underlying assumption was that linkage mechanisms could be instituted to foster interorganizational relations and to establish bonds between actors for communication, exchange, influence, and coalition building. The development of linkage mechanisms was thus the fundamental step toward the development of coordinated networks of planners, policy-makers, and implementers. This section assesses the bonds and mechanisms which were the outputs of linkage strategies.

6.3.1 General Characteristics of Linkage Bonds

The bonds between organizations in linkage mechanisms had a variety of purposes. Increasing in degree of interaction and mutual accommodation among participants were bonds which: 1) transferred information among participants (communication linkages), 2) established commitments for resource transfer among participants (exchange linkages), 3) instituted channels for direction and alteration of decisions among participants (influence linkages), and 4) consolidated activities among participants to pursue joint purposes (coalitional linkages). Some of the possible mechanisms to establish each of the different types of bonds in the linkage networks are identified below.

Communication Linkages

- Informal contact (among individuals in interacting organizations).
- One way transfer of data between organizations (on manpower, programs, etc.).
- Written communication (letters, memos, newsletters).
- Personnel movement (recruitment of individuals to an organization from an interacting organization).
- Liaison roles (individual named from each organization to serve as contact for communication between organizations).
- Liaison committees (group of individuals from each interacting agency which meets periodically to share information).

Exchange Linkages

- Resource exchange (trading or buying/selling between organizations for resources).
- Reciprocal exchange commitments (contracts for long term provision of goods and services).
- Shared services (joint use of single source of service or economic advantage).
- Joint ventures (joint establishment by interacting organizations of a separate entity to operate programs for common gain).

Influence Linkages

- Consultation on decisions (advice sought by a focal organization from interacting organizations).
- Analytical support for decisions (analysis of decision alternatives for a focal decision-making organization, such as the Board of Regents, by an outside organization, such as the State Health Planning Agency).

- Domain agreements (formal understanding of roles, services provided and areas served by interacting organizations).
- Advisory committees (permanent committee, short-term task force, or ad-hoc study group to seek a wide range of information and advise a focal organization on the choices for decision-making).
- Interlocking staff (overlapping appointment of planning staff who support decision-making in interacting agencies).
- Interlocking directorates (overlapping membership of policy making boards of interacting organizations).

Coalition Linkages

- Joint programs (mutual establishment of a program contained in each of two or more interacting organizations which contributes to the goals of each).
- Joint staff appointment (mutual appointment of operational or planning staff by two or more interacting organizations to single positions which are part of the structure of each organization).
- Institutional affiliation (formal agreement among interacting organizations to manage and operate joint programs, and thus interact at a policy/management level).
- Coordinating organization (e.g. consortium; establishment of a separate organization/council by interacting organizations to share policy information, plan, and manage common affairs of the group).
- Joint executive (mutual appointment of executive directors/staff with broad budget and policy authority by two or more interacting organizations).
- Joint Board (single governing board to direct activities of integrated set of interacting organizations).

The different types of linkage bonds and mechanisms can be evaluated on two general dimensions. The bonds classified above are ordered in terms of their intensity. Also each mechanism can be described in terms of the degree to which it is formalized. These two factors are assessed below.

Intensity. As defined in Chapter 2, more intense interactions are signified by greater communication, more resource

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exchange and greater mutual influence in decision-making. The more that agencies combine their activities and the higher level in the agency or the more importance to the goals of the agency of those activities, the more intense is the relationship.

More intense linkages were generally more difficult to establish and took longer time periods to function effectively. While communication and exchange linkages involved sharing of resources and information, they generally entailed a *quid pro quo*, and did not infringe on the autonomy and discretion of the participants. Influence and coalition linkages, on the other hand, did present a possible cost to participants by limiting their actions. For example, a school may not be able to expand its program if a policy committee determines that there is an oversupply of manpower. *The more intense linkages, such as policy advisory committees, were required in the linkage systems to improve planning and decision-making. Therefore, one of the important tasks of the linkage project was to highlight the benefits of cooperation in a way that they overshadowed the costs of loss of autonomy of individual participants in the coordination mechanisms*.

Formalization. The formalization of a linkage mechanism describes the degree to which it is explicitly specified and structured into the system. Linkage projects relied on both formal and informal devices to establish connections in the decision system. Informal mechanisms were often the strongest connections between agencies, particularly for communication and information exchange, but more formal mechanisms were required for a number of purposes. Formal communication mechanisms, such as the establishment of liaison roles or committees, not only institutionalized the linkage, but provided an explicit forum and focus for interaction. Information important to all parties was less likely to fall between the cracks of an informal system. Formal exchanges were important to specify the expectations of both sides as to what each was receiving and giving, and thus reduce unnecessary misunderstanding and conflict. Formal influence mechanisms were important more in their negotiation and structure than in their actual content. Often, formal working agreements were a ratification of past action or the initiation of a structural mechanism (e.g., overlapping committee staff) to carry out common purposes. The content of a written agreement was less important than either the symbolic value of the agreement or the structured mechanism to continually update the relationships in changing conditions.

6.3.2 Specific Linkage Mechanisms

The networks for health manpower planning and decision-making in the sample of states used one or more of the mechanisms (classified in Section 6.3.1) to link the public agencies and private organizations which influence the implementation of manpower policy in the education, health services, or manpower employment sectors of the states. Because manpower related programs are contained in disparate parts of the state government, no state consolidated all functions into a unitary structure, but instead states sought to link the elements of the different sectors and supplement existing mechanisms with additional coordination mechanisms. After describing the range of linkage mechanisms which existed outside the linkage project, the specific mechanisms instituted by the linkage projects are described and evaluated below.

6.3.2.1 Concurrent Linkage Mechanisms

All of the states had a variety of coordination and planning mechanisms in their health manpower decision systems which had been initiated from any of a number of Federal, state, and private sources. As described below, these mechanisms were part of the existing coordination network which was often closely connected to linkage agency activities.

Categorical Planning/Policy Committees. As has been mentioned in Section 6.1.2.1 separate efforts preceding or during the linkage projects were initiated to address nurse planning outside of direct linkage planning efforts (South Carolina, Wisconsin, Missouri, Georgia, North Carolina, Hawaii, Massachusetts) and less frequently, physician manpower planning (South Carolina, New Jersey and Wisconsin). Because of the proximity of interests and resources, these efforts were mostly connected to linkage project efforts.

The separate *nurse planning committees* were generally initiated within the profession by practice leaders in the state nurse associations or by academic leaders in the universities. Funding was often supplied by the Division of Nursing in DHEW. The groups represented the nursing profession, higher education, health planning and credentialling agencies of the government. A broad range of topics were covered from levels of education needed, to numbers of graduates required, to practice legislation for mid-level nurse practitioners, to joint practice commissions with physicians. By including higher education and health planning representatives, most of the committees had impact upon nurse manpower decisions.

The *physician committees* were policy committees which had been established by legislative action primarily to advise the Higher Education Boards and the Legislature on funding of medical education. Wisconsin and South Carolina had committees with the additional function of coordinating resource allocation and utilization of clinical facilities for teaching between two state supported medical schools.

Vocational Education Linkages. Other important linkage mechanisms were developed in the states to coordinate among various vocational education and job security or employment agencies (e.g. CETA). Some states had Occupational Information Coordinating Committees to reconcile data requirements of different Federal Programs. Vocational education planning was coordinated to some extent among agencies responsible for secondary education and those responsible for associate degree education through various planning linkages.

Data Linkages. As has been discussed earlier, data systems were important linkage mechanisms in most states. A few states, such as Maryland and New Jersey, developed their own cooperative data gathering systems out of linkage project money. A number of other states, such as Ohio, Arkansas, Hawaii, South Dakota and Georgia, had no on-going system to support planning. Most of the states had CHSS manpower components which not only provided information, but made important connections between the professional groups supplying data and the planners using the data. In several states (e.g., North Carolina, Mississippi, Arizona), the data linkages were the primary coordination mechanisms in largely fragmented networks.

Program Based Linkages. In a number of states, manpower related service programs established important local level linkages. Rural health programs often linked local health service providers with the recruitment efforts on a state or national level. Designation of shortage areas for primary care physicians, and procurement of funding from RHI and NHSC were the prinicipal manpower activities of HSA's. Area Health Education Centers were a focus for regional coordination of health service and health professions education. The local *Health Manpower Consortia* initiated in a number of states by Regional Medical Programs have survived in some areas as an important mechanism for planning and coordination of users and producers of health manpower, primarily allied health professionals and nurses.

Other Linkage Mechanisms. Other important linkage mechanisms which had impacts on decision-making were developed in several states. Interprofessional coordination was fostered in some areas by Joint Practice Commissions or Joint Conference Committees, mostly between physicians and nurses. In some states (e.g., Arizona, Nebraska), voluntary coordinating organizations were established by professional and private interests to discuss health problems and to encourage planning, coordination and evaluation of programs.

6.3.2.2 Linkage Project Mechanisms

Advisory Committees. As specified in the contract, each project assembled an advisory committee to guide the activities of the project. The functions of these committees, however, varied from state to state.

Several states (Arizona, Hawaii, Massachusetts, Ohio and Maryland) initially had advisory groups whose function was limited to technical and strategic guidance of the linkage project. Although high level policy makers were usually included in these groups, the committees did not deal with substantive policy questions. The functions of the committees were to review progress and technical products and to approve plans for future steps. The committees often appointed task forces or subcommittees to address specific tasks, such as survey development or data coordination. Some of these committees were attached temporarily to the SHCC as manpower subcommittees in name, but they generally ceased to exist after the projects terminated.

A second form of advisory committee was the planning committees found in Missouri, Arkansas, South Dakota and Nebraska. These committees were also primarily advisory to the project, but had as a goal the development of specific plans for health manpower, including goals, problem identification and recommendations for action. These committees contained representatives of a broad range of influential organizations (professional groups, educational groups, state agencies) in each sector of the state. Although the representatives were a source of information on the views of their constituencies, they did not speak for their organizations or commit them to any policy action. In many instances, the incorporation of the views of the different groups did facilitate later implementation. In the planning committee structure, a wide range of subcommittees or task forces was usually established to plan for specific occupations; these included a Technical Methods Committee, an Implementation Committee, other support groups, and an Executive or Steering Committee to make final recommendations. The committees were mostly temporary mechanisms to produce a particular product, but in the case of Arkansas, the Health Manpower Planning Board became a Policy Advisory Committee of the SHCC.

Another form of advisory committee made its recommendations to policy making boards or executive agencies in the government with authorities to implement at least some aspects of health manpower policy. The *policy advisory committee* was found in New Jersey, Wisconsin, Minnesota and Virginia. South Carolina had a policy committee not directly connected to the linkage project so, instead of duplicating their functions, no separate advisory group was formed. On the other hand, Massachusetts had a policy committee associated with the State Health Planning Agency which, in spite of linkage project activity, addressed few manpower issues directly. Georgia attempted to form a policy committee in the linkage project, but it was not institutionalized.

Policy advisory committees, like other advisory committees, contained representatives from a broad range of organizations in different sectors relevant to health manpower. Members were generally high level administrators who could speak for their respective organizations, even though they could not commit the organizations to any action without approval. (This was especially true for educational institutions where power is dispersed widely in the faculty). The extent to which these decision-making committees actually coordinated among the often conflicting objectives of their members was a subject crucial to the success of the committees, which were dependent on the group process and the structure of incentives for collaborative action. An advisory group which could attain consensus among its members could usually carry the decision at higher levels, because the power to implement choices or to block choices politically was usually represented in the committee. Higher level approval (in the Higher Education Board or the Legislature) became merely a ratification of the carefully considered choices of the committee.

The structure of policy advisory committees varied in the sample. Standing committees were organized around substantive policy-making functions, such as credentialling, program review, planning or data. Most projects made extensive use of subcommittees and task forces to study specific issues. Some also had technical advisory subcommittees made up of methodological experts from different sectors of the decision system.

Almost all of the policy committees preceded the linkage project in their conception, but several were greatly facilitated in their initiation by the linkage funding of their technical staff. Based on the observation that the policy committees started mostly on state initiative and continued to function after the linkage funding ended, it can be concluded that the linkage project was able to strengthen efforts which had internal state motivation to get it going, but the project alone could not institutionalize planning and linkages without demonstrated foundation and motivation in the state.

Evaluation of the different types of advisory committee mechanisms which were used by linkage projects can be made primarily in terms of the overall strategy employed by the project. With some exceptions, projects with foundation strategies relied on strategic advisory groups; projects with information strategies used technical advisory groups; projects with planning strategies established planning committees; and projects with decision system development strategies were guided by policy committees. The success of these committees was generally related to the success of the overall linkage strategy.

Interagency Agreements. Second to advisory committees, interagency agreements of several forms were the most prominent linkage mechanisms.

As has been discussed extensively in previous sections, subcontracts were used in Wisconsin, New Jersey, Minnesota, Virginia, Massachusetts and Nebraska for the principal purposes of solidifying formal linkages among core planning agencies for health manpower (i.e. higher education planning, health planning, manpower planning). In addition to the technical accomplishments of subcontracts, the working relations that were established were intended to carry over to post linkage interactions. The problem with subcontracting as a linkage mechanism was the requirement for substantial continuing resources to institutionalize the linkage. Buying technical skills does not necessarily imply that commitment to coordination will follow. Subcontracts as linkages were successful only as seed money for intitiating individual contracts and organizational commitments to cooperation. Actual commitments had to be achieved through other processes and then institutionalized through more permanent mechanisms.

Formal cooperation agreements were drawn up in a number of states to specify the roles and responsibilities of the agencies in areas of sharing data, planning and sometimes mutual decision-making. In South Carolina and Missouri, formal memoranda of cooperation were drawn up between the linkage project agency and a number of other state and private organizations. The multiple agreements placed the linkage agency at the hub of a number of bilateral agreements. Actual implementation of the agreements, however, varied over time depending on the real incentives for cooperation in any situation.

Minnesota, Maryland and Virginia also used formal memoranda, but each focused on one or two key planning linkages.

The Virginia project in the Higher Education Agency signed an agreement (along with its subcontract, but extending beyond the subcontract) with the SHPDA (and SHCC); the Maryland project in the Health Planning Agency began to work closely with the Higher Education Agency; Minnesota coordinated Higher Education, Health (credentialling) and State Planning (SHPDA).

Cooperation agreements were meaningful only to the extent that they were backed up by good faith and by more concrete exchanges of information, resources, joint efforts, etc. Cooperation agreements differed from subcontracts in that they had a less restricted time period for their operation. They also usually had less resources to back them up. To the extent that cooperative agreements ratified and made explicit real commitments and concrete interaction mechanisms between partners, they facilitated coordination and linkages in the system.

Interagency Management Committees. Two projects (Maryland, Minnesota) developed small committees of staff from key government agencies (e.g. health, higher education, planning) to manage the process of the linkage project, and to manage staff resources for analysis of policy and planning issues taken up by policy advisory committees. In some cases, the alliances formed in these committees were important sources of influence on health manpower policy.

Missouri and Massachusetts each used a similar device with a more narrow focus. Missouri established an Interagency Task Force to implement the findings of the manpower studies which could easily be instituted within the State Government. The Massachusetts Interagency Management Committee met early in the project to define roles and divide the project resources among three cabinet level coordinating agencies.

Wisconsin achieved a similar effect in a less formalized and less centralized way. The four subcontracting agencies each employed staff with linkage project funds. Three of the four were the lead agencies to provide support for three key policy advisory committees for health manpower (the fourth agency provided technical and data backup to all the agencies). To insure coordination of policy among the three committees, each lead agency contributed its staff to the other two committees. The overlapping committee staffing, which continued after the linkage projects ended, brought a wide range of skills to each committee and facilitated coordination of effort.

The interagency management committees were generally employed successfully (4/5 cases) to form a coalition of core agencies (e.g. Department of Higher Education, State Health Planning) to coordinate health manpower sectors at the administrative staff level. *By cooperating, the few core agencies could combine political resources to a point sufficient to guide the larger process of coordinating strong professional and educational interests. To be successful, however, each of the cooperating agencies needed to have sufficient resources to be able to coordinate within their own sector, and each needed to recognize the complementarity of its interests with the other partners.*

Statewide Manpower Conferences. Several states, including Arkansas, Georgia, Hawaii, and Missouri, sponsored widely attended Governors' Conferences on Health Manpower. These meetings had several purposes related to communication and influence linkages. Key aims of the conferences were to raise the level of awareness of issues related to health manpower in the state, and to identify problems to be addressed in health manpower policy making. By communicating to a wide audience and allowing the audience to interact among themselves and the sponsors, more support for planning and implementation of decisions was attained. In Arkansas and Georgia, conferences also were used to receive feedback and input on recommendations of the projects.

Manpower conferences were valuable to projects primarily for the purpose of raising the level of awareness of problems and support for solutions. In states which had little previous effort in the health manpower area, conferences represented an opportunity to personally interact with a large portion of the parties who had interest in the problems.

Summary. This chapter has drawn upon the experiences of seventeen linkage contract states to identify and assess the strategic and management factors important for the development of effective health manpower decision-making. Based on the emphasis, sequence, and scope of planning and linkage development efforts, several strategies were found in linkage states. States which concentrated on research and methodological tasks in their strategies were relatively less successful unless they first developed coordination among priorities of influential decision makers and instituted administrative mechanisms to implement planning.

The operationalization of a linkage strategy was described in terms of the political resources associated with the linkage contractor. Depending on the context and level of resources available, linkage contractors had choices to make about allocation of resources to organizational and technical tasks. Implicit in the staff organization and integration with the home agency and in the use of communication to achieve project or agency visibility was an attempt to create an identity for health manpower planning and decision-making. While establishing common goals in "system identity" was the ultimate goal of planning and linkage activity, a more practical first step was to establish an identity for health manpower planning in one or a core group of established agencies. Establishing an identity for a temporary project was the least effective use of the demonstration project funds unless existing agency identities were negative. Although allocation of resources to subcontracting agencies often aided linkage among a core group of agencies (development of system identity), development of technical tasks was most effective with a centralized, multidisciplinary core staff of social science researchers, information system specialists and organizational development specialists. The solution to this centralization/decentralization dilemma was found in the developmental cycle of the linkage system development, which requires intensive technical development (and a core staff) only after the first generation of planning and functional elements of the decision system are in place.

Finally, the range of mechanisms used to implement linkages (the outputs of the strategy) were presented. Advisory groups, interagency agreements, management committees and manpower conferences were used in different situations to supplement the existing mechanisms and enhance system development.

Chapter 7

CONCLUSIONS AND RECOMMENDATIONS

Chapter 7

CONCLUSIONS AND RECOMMENDATIONS

This chapter summarizes the findings and recommendations of the evaluation of the Linkage Program in several ways. First, the concept of linkages is clarified and its utility is specified. Then, the findings are elaborated in terms of recommendations for state and Federal health manpower planners and policy makers.

7.1 Appraisal of the Linkage Concept

Recommendations about whether and how to promote linkages require a conception of what the idea is and how it can be used. A major obstacle to the utilization of the concept has been the lack of an exposition which distinguishes it from the surrounding decision system and connects it to other parts of the system. Based on the conceptual framework in Chapter 2 and the findings in Chapters 4, 5, and 6, the following outlines the major elements of the linkage concept and its utility for decision-making for health manpower or for any substantive area of policy making.

Clarification of the Linkage Concept. Basically, linkages are the connections among individuals, organizations, and functions of a decision system. As such, the linkages are distinct from the planning, the implementation of decisions or any of the other functions of the decision system. The original idea behind the Health Manpower Linkage Program was to connect the health manpower planning process to resource allocation decisions in state governments. The concept was based on the observation that decision making is often carried out without planning input, but planning and analysis improve the quality of decision-making so that connection of planning to decision-making is a desirable goal.

Although the original conception of linkages was accurate and useful for health manpower planners who were instituting linkages, the experience from the states allows expansion of the concept, as follows.

Each element of the concept--planning process, linkages, and decisions--is a separate part of a system of decision-making. In this system,"linkages" are the relationships among organizational actors. Relationships include the transactions for communication, resource exchange, mutual influence and joint activities. The relationships or linkages can be formalized through specific mechanisms,such as contracts or coordination committees, or they can be informal. Linkages can be bilateral connections between pairs of organizations or combinations of the two adding up to networks or chains of relationships.

The linkages are to be distinguished from the functional and substantive parts of the decision system represented by the elements to be linked--the planning process and health manpower decisions. Resource allocation decisions are only one of several substantive kinds of choices that are made in a state which affect health manpower production, employment, and utilization. Other important substantive areas of decision making include program development decisions (education programs, manpower services), quality assurance decisions (accreditation, credentialling), and utilization decisions (staffing and organization of services). Thus, the decisions to be linked include a wide range of substantive issues.

Decision-making can be viewed as a series of functional tasks to make and carry out any of the substantive choices faced by the health manpower (or any other) decision system. In the decision process,the actual *choice* is only one point. The choice point may or may not be preceded by a deliberate analysis of alternative choices and consequences, and it may or may not be followed by actions to initiate and continually implement the choices. Choices often occur after implementation as a ratification of what is already taking place, or the realities of implementation can alter the consequences of prior choices. In the context of overall decision-making, the *planning process* is the set of analytical tasks in which alternative future choices are deliberated. Planning tasks include the establishment of goals and priorities, the acquisition of data and information, the analysis and interpretation of information, and the development of comprehensive plans and recommendations. In order to distinguish planning from the rest of the decision process, the term "implementation" is used to describe the choices, the action steps of initiation, and the monitoring of the decision outcomes.

The system of decision-making encompasses both the functional steps (planning and implementation) in the process of making a decision, and the networks(s) of influential actors who participate in various aspects of the process(es). The definition of the system is determined by the substantive area of decision-making addressed by the system; in this case health manpower. Health manpower decisions are broadly concerned with the development and maintenance of a workforce with at least minimum qualifications to deliver medical care and health services, including preventive care and public health. No matter how "health manpower" is defined (e.g., to include occupational safety or mental health services), the definition will identify for any state context the actors who have the power to make and/or carry out decisions. The actors define the social system for decision-making, a system which is generally organized into different sectors for education, health services, manpower services and policy/finance. The specific decision types (e.g. resource allocation, program development) and decision functions (e.g. data gathering) define the sub-tasks to be accomplished by the system.

Given this view of decision-making as a total process that includes both planning and implementation functions carried out by actors in a social system, the purpose of linkages can be defined as the connection and intergration of the two sets of decision functions in the decision system. The major concern of a linkage mechanism or the set of mechanisms comprising a linkage network or system is thus the utilization of planning products in implementation. The theory is that coordination of the important decision actors in the system and integration of the planning and implementation functions will lead to more utilization of planning and better decisions. Two underlying assumptions are: 1) More coordination and better information mean better decisions and 2) More utilization of analytical planning means better decisions.

Most concepts of planning for health manpower (or for any other substantive decision area) are based on a series of logical analytical tasks to be performed (i.e., the planning process). What is missing from those concepts, and what the linkage concept endeavors to correct, is a theory about how the planning process is connected to the implementation of decisions so that planning is actually used to improve dicision-making. Planners need more than a theory of "plan implementation" to be activated after the plan. What is needed is a concept of where planning fits into a system of decision-making, especially for a system which cuts across the boundaries of single organizations and sectors of statewide decision-making.

The goal, then, of the linkage concept is to improve the system of decision-making. This, in turn, presumably will improve the decisions made about health manpower and, ultimately, the composition of the health care workforce and the health of the population. The system is to be improved by integrating the functions of planning and implementation to make use of planning products, and by coordinating the choices and actions of the actors in the decision system who plan and implement the decisions.

These goals address the structure and process of the system such that the measures of project success are essentially structure and process measures. Although the substantive decisions are important to the concept of linkages because they define the boundary of the system, i.e., the actors within and outside the system, the content of specific choices is not a direct concern of the evaluation of linkages.

In order to carve out a viable, useful role in the decision system, planners need a framework for comprehending and diagnosing its structure and process so that plans can be tailored to the decision realities, and planners can take active roles in guiding and shaping the system to generate information and to make best use of the planning products. The concept of linkage is the essence of such a framework. The contributions of this evaluation of the linkage concept to planning and policy making are: a framework for the description of the social system for health manpower decisions, analyses of how planning fits into the system, and the beginning of a specification of how both planning and the system can be improved.

Utility of the Linkage Concept. The findings of this evaluation support the utilization of the linkage concept as a means to improve decision-making. The analysis in Chapter 4 reveals that the decision systems which utilized planning products in decision-making and which had impact upon the course of policy-making in the state were those states which had developed coordination and integration of their decision system through the establishment of strong linkage mechanisms. Furthermore, states which displayed the most effective decision systems (greater integration of decision-making, higher planning utilization, greater development of specific decision capacity products) emphasized development and coordination of the structure of the decision system. The more effective systems had a large number of the administrative processes in operation, and they had a high degree of coordination and integration of implementation tasks. Although many of the most effective systems also had developed highly sophisticated technical planning capability, and all of the most effective had at least moderate technical capability, states which developed only technical planning capability had less effective health manpower decision systems. Thus, based on the assessment of the linkage concept, we recommend the following:

> *Recommendation 1*: The utilization of a concept of linkage, which is aimed at development of the structure *and process of the decision system in order to integrate planning with implementation of decision-making*, is a necessary condition for the development of effective planning and implementation of decisions. State and Federal decision-makers should pursue the development of such planning and linkage systems.

Elements of a Well Developed Planning and Linkage System.
To accomplish the aim of the linkage concept, factors associated with a well developed decision system must be specified. The factors used in this evaluation to assess such systems are outlined in Figure 7-1. In the figure, 23 planning and implementation products are identified for the four planning functions and the three implementation functions. A well developed system will have developed these products as elements of the system. A well developed system will not only have developed the individual decision tasks, but will also have organized those tasks in such a way that the flow of information and actions results in effective decision making. Furthermore, the well developed system will recognize the impact of the social/political system in which the decision making is taking place. Decision-making is not merely the accomplishment of a set of logically ordered tasks of intelligence, choice, and implementation, but it is also a process in which interacting organizations and interest groups try to influence the tasks at different points.
A well developed system will have established linkage mechanisms to coordinate the different organized groups to account for their influence on the process and take into consideration their different resources, identities and objectives. The result will be the integration of the planning and implementation tasks.

Figure 7-1

ELEMENTS OF A PLANNING AND LINKAGE SYSTEM

DECISION FUNCTIONS	DECISION CAPACITY	COORDINATION CAPACITY
Planning Tasks 1. Data and Information	- Vital Statistics Inventory - Education Program Inventory - Health Manpower Inventory - On-going Data System	- Coordination of education program data - Coordination of health manpower data
2. Analytical Methods	- Population Projection Methods - Manpower Supply Projection Methods - Manpower Needs Assessment Methods - Educ. Programs Needs Ass. Methods	- Interdisciplinary and intersector coordination of technical expertise (central core research staff)
3. Goals and Priorities	- For Health Manpower - For Education Programs	- Coordination of values and judgments of policy-makers within and between sectors
4. Comprehensive Plans	- State Health Plans - Health Systems Plans - Higher Education Plans - Health Manpower Plans	- Coordination of information analyses and priorities to form recommendations within sectors or across sectors
Implementation Tasks 5. Choices Among Alternatives	- Administrative Budget Allocation for Health Services - Administrative Budget Allocation for Education Programs - Administrative Program Review and Approval Mechanism - Administrative mechanisms to establish credentialling	- Coordination of criteria, analysis, recommendation, and political influence to obtain consensus
6. Initiation of Action	- Education Program - Manpower recruitment, employment and retention programs	- Coordination policies and programs and organization structure to carry out programs
7. Evaluation and Control	- Education Programs (quality and need) - Manpower Registration and Discipline - Supply and Demand for Manpower	- Coordination of data and information; structuring of mechanisms for monitoring outcomes
System Tasks	- Design of organizational structure for flow of information and action	- Integration of planning and implementation tasks

In addition to the development and integration of the functional elements of decision-making, the well developed system will address a broad scope of substantive issues. After the functional elements are in place and operating, the system will broaden its scope to include all levels of professional expertise and occupational groups and all areas of substantive decision-making. Figure 7-2 illustrates the scope of a well developed system.

7.2 Recommendations for State and Health Manpower Planners and Decision Makers

Health manpower is primarily a state responsibility. Although health professionals are highly mobile, especially in the more highly trained occupations, most health professionals participate in a local labor market. In addition, educational resources for health occupations are contained primarily in state owned universities, and the legal basis for professional practice is governed by state laws. The Federal Government plays a major role in funding health research, health occupations education, and health services, most health services and manpower services are delivered by private organizations on the local level. However, the state is the prime focal point for overall administration and planning for health manpower.

Given the utility of the concept of linkages, the principal recommendation to state health manpower planners and policy makers is to develop their planning and linkage systems to improve their capacity for decision making. Based on the analysis of contextual and strategic factors associated with development of effective decision systems (Chapters 5 and 6), this section takes the broad recommendation from above, and develops more elaborate recommendations about how this linkage development might proceed. Because each state has unique qualities, the recommendations have to be presented in general terms aimed at providing guidance to planners and policy-makers who wish to take more specific steps in their own situations.

Figure 7-2

SUBSTANTIVE SCOPE OF DECISION SYSTEM

Decision Type / Occupational Category	Program Development	Quality Assurance	Manpower Utilization	Resource Allocation
1. Primary Health Professions (MODVOPP)				
2. Mid level Practitioners (Nurses, Phys. Ass't)				
3. Allied Health Occupations				
4. Health Administration and Planning				
5. Mental Health (Psych, Social Work)				
6. Public Health				

The concept of linkages proposed in this evaluation addresses the development of the interorganizational structure and process of decision-making, and the coordination of planning with substantive policy making. Therefore, recommendations for state health manpower planners are considered in a framework for development and change of the decision system.

The framework has three intervention steps which correspond to the analysis in Chapters 5 and 6:

- Intelligence - assessment of the conditions for development of the planning and decision system;
- Design- establishment of strategies for system development;
- Operation - organization and management of system development.

The recommendations presented below have general applicability to development of the planning and decision system for any substantive area of policy-making in a state, particularly areas which cut across boundaries of current government organizations. However, the focus and substance of this evaluation has been on health manpower decision-making, so that recommendations have particular relevance for health manpower planners and policy-makers. The principal audience for these recommendations are thus the broad range of decision-makers in a state who have concern about health manpower. These individuals might be found in community colleges, universities, or vocational and higher education administration (the education sector); in health service organizations, health departments, or health planning agencies (the health service sector); in professional organizations, manpower/labor departments, or licensing boards (the manpower service sector); and in budget and planning agencies, legislative committees or the governor's office (policy/finance sector).

Within this broad range of health manpower decision-makers, the recommendations have specific importance for those planners and administrators in health planning, manpower planning, and higher education or vocational education planning agencies who have specific responsibility for development of an intelligent structure for public policy. Since many of the policy issues in health manpower have a statewide impact (especially those relating to higher education, licensing and employment of advanced degree professionals), recommendations for health planners are primarily directed toward state health planners. HSA's also have an important role in planning for local utilization of health manpower and in linking with local training institutions to plan for training of allied health and other non-degree health workers. HSA's are also part of a state network of health planning, and as such, they play an important role in determining health manpower needs.

Because the investigation of linkage systems is in an early stage of conceptualization, there are no laws or absolute statements that can be made. Instead, the recommendations which follow are a general statement of the application of the evaluation results to state health manpower planning.

7.2.1 Assessment of Conditions for the Development of the Planning and Decision System

The first step in the development of a planning and linkage system is an assessment and diagnosis of the current structure of the system, the current planning capacity, and the need for either coordination of decision-makers or integration of planning and decision-making functions. This assessment identifies the general contextual constraints and opportunities for system development, the structure and resources in the current decision system, and the agency capability and motivation for development of the decision system.

State Context. Factors in the general context of the state associated with successful linkage development have been identified in Chapter 5. Probably most important is the perception of a problem in the area of health manpower, either an undersupply or severe maldistribution. A problem is indicated by widespread concern over the issue, and by the relative priority attached to the issue in legislative committees and key state agencies (higher education, health). If there is a recognized problem in a state, the motivation for solution and, therefore, the motivation for linkage development will be greater than without such recognition. If there is a problem which is not recognized, an opportunity exists for policy leadership to raise the issue.

Changes in state appropriation levels can have counterproductive effects on linkages. Where states are increasing funding, an opportunity exists to use a linkage system to spend more efficiently. Even so, an increase in funding may be detrimental to the establishment of new linkages unless the allocation of funds is earmarked for a coordinated effort. This is because allocation of funds to a single agency will reinforce its independence and autonomy from other agencies, and will encourage it to implement programs in line with its past orientation. Conversely, a decrease in funds can be a threat to the output of manpower programs unless the agency sees the opportunity for more efficient spending by coordination with existing resources. Thus, planners need to assess funding trends in order to plan for decision system development. Also, in order to achieve policy goals through the appropriations process, state budget makers should consider the impact of the current linkage structure on allocation of funds, and encourage the development of structures which will facilitate coordination of resources.

The general political environment of a state has some impact on its ability to develop linkage structures for coordination and integration of decision-making. In more progressive states that are receptive to planning and regulation on a statewide level, decision makers will probably have some precedence for participation in cooperative efforts. States with stronger executive branches relative to the legislature will have more administrative mechanisms to provide a basis for linkages, and less political domination of decision premises. Thus, the strength and political persuasion of the legislature should be assessed when considering the development of linkage systems.

Current Decision System. The development of sufficient political resources and authority to encourage cooperation has been identified as a key ingredient to a successful effort to develop the decision system. These resources (discussed in Chapter 6 and below) include technical capability and access to information, but go beyond to include administrative authority for budgets and program approval, political coalitions and legitimacy of action. No matter what level of resources is available to an agency or to any group of agencies, an understanding of the resources in the system is important, first, to identify sources of additional political resources and, second, to be able to influence the incentives toward integration of the system. Thus, a mapping of the political and organizational resources, and a periodic updating of the map, are essential tasks for linkage development. The more political resources in the system, the more capable it is for development.

Factors in the structure of the current decision system have been identified as important in developing effective linkage systems. States with more unified public education and less influential private education sectors have generally developed more effective decision systems. States with previous linkage and coordination mechanisms were able to develop more effective decision systems. In addition to the obvious value of experience in collaboration among actors, decision systems which already had a focus for interaction within each of the sectors concerned with health manpower could more easily coordinate between the service, employment and education tasks. Thus, identification of the elements of a linkage system already in place is an important early step in linkage development. The more elements that are in place, the greater the state of readiness for further system development.

Technical expertise is one of the important political resources available to decision-makers. Findings of the evaluation show that greater prior analysis and planning experience were associated with more effective decision systems.

In addition to the credibility afforded decision-makers who have thoughtfully considered the consequences of alternative solutions to problems, many substantive insights are possible from research and planning efforts. Better data and better methods for analysis and planning can help isolate problems, and refine policies for addressing problems. Identification of the sources of expertise to define problems and solutions, and the capability to locate and analyze information are both important for the substantive consideration of decision issues, as well as the political process of decision-making. Thus, a mapping of technical/planning resources, and a periodic updating of the map, are necessary for linkage system development. Greater technical resources indicate greater capability for system development.

Agency Resources and Goals. The level of resources and motivation for development of the decision system in any one or a core group of agencies is the key to the *appropriate location* for linkage system development. Hence, the offer of funding for linkage by HRA enabled many Comprehensive Health Planning 'A' Agencies to initiate the process. However, as has been emphasized, non-financial resources, such as access to data and information, connection to significant private interest groups, and administrative authorities, are also important resources for developing linkages. These resources are sometimes connected to the location of the agency.

Although no one location is uniformly best to initiate linkages, findings from this study indicate that the *level of government* should be low enough to assure access to technical expertise, and to minimize political vulnerability, but high enough to offer a broad perspective and neutrality with respect to policy and resource allocation among agencies. Generally, *the location which seems best suited is that of a cabinet level agency or planning/administration agency with a broad policy perspective*.

The different sector locations (e.g. education, health services, manpower services, policy/finance) each displayed different advantages, but during the time of the linkage projects, education administration agencies had better overall success. Manpower and licensing agencies had little planning emphasis, and health planning agencies had little administrative leverage compared to the higher education agencies, which had both a planning mandate and a range of authority to create an incentive for cooperation. Because health professions education was generally an area of specific concern to the higher education administration (due to the rapid growth rate), these agencies made notable achievements in health manpower linkage development.

The implementation of PL 93-641 occurred during the Linkage Program, and newly designated SHPDA's took over many of the linkage projects. In the transition to the strengthened health planning system under the new law, concern for health manpower was not often a high priority for SHPDA's which were more concerned with attaining full designation. In many states, linkage projects enabled the agencies to direct resources to health manpower and to obtain recognition in an area which had been (and continues to be) dominated by professional and educational interests. Since becoming fully designated, SHPDA's in states that recognize manpower problems have begun to place greater priority on the issue; others have at least taken on the minimal role of *defining service needs* for health manpower. As descendants of the programs which initiated the concept, *future responsibility for continuation of the linkage concept lies heavily on the Health Planning Agencies to provide a key base of resources for establishing collaborative networks for health manpower planning*.

Sector location of linkage development initiatives depends on the amount of fiscal/political resources available to planning agencies in the sector. Since linkage system development, by definition, requires incorporation of each sector (education, health service, manpower service and policy/finance), no one sector is best. Coordinated initiative from more than one sector is better than a single initiative because it provides a broader range of resources.

The motives and aspirations of the agency and its leaders must be examined in light of the realities of the needs for system development. For example, an agency which wants to enhance its political position or apply methodologies which it has developed to project manpower requirements should examine these aspirations in light of the developmental requirements of the linkage system,as well as the resources to carry out tasks. Agency development toward its goal will be enhanced by matching its goals and activities to developmental requirements of the system.

A summary of recommendations on the assessment of conditions affecting linkage systems follows.

Recommendation 2: Organizations considering the initiation of planning and linkage systems should carefully assess the general state context, the current decision structure, and its own motivation and resources for development of the decision system.

State Context

2.1 Assessment of the perceived problems of health manpower are important prior to linkage development.

  2.1.1 Where perceptions lag actual problems, consciousness raising is an important leadership task.

2.2 Assessment of appropriation trends is important. Appropriations can produce mixed effects. Planners should take leadership in pointing out threats and opportunities.

  2.1.1 Funding increases should be earmarked for coordinated efforts, or risk an increase in system fragmentation.

  2.2.2 Funding decreases should be seen as an opportunity for more efficient spending through coordination.

2.3 Assessment of the relative strength and political persuasion of the legislature and executive branch is a prerequisite for linkage development. Relatively strong conservative legislatures tend to inhibit linkage development.

Current Decision System

2.4 Assessment of the amount and distribution of political resources of organizations in the system is important prior to and throughout linkage development efforts. The more resources that exist in the system, the more capable it is for development.

2.5 Assessment of the structure of the decision system is important to linkage development. Systems with unified sectors are better prepared for linkage.

2.6 Assessment of the amount and location of technical/planning capability in the system is important to the identification and solution of substantive problems and, hence, system development. Greater technical resources indicate a readiness for system development.

Agency Resources and Goals

2.7 Assessment of agency resources and motivation is necessary prior to initiation of linkage development activities.

2.7.1 Assessment of the policy level and fiscal/technical resources of planning agencies in each sector is the initial step for linkage development. Connection to a broad administrative power, technical expertise, and protection from political volatility indicate readiness to take initiative.

2.7.2 Although no one sector is best, education and health planners generally have the greatest interest in health manpower planning. Where more than one agency has an interest and resources, coordinated initiative from more than one sector is preferable.

2.7.3 The motives and goals of an agency should be assessed to insure that they are in line with developmental requirements of the system.

7.2.2 Establishment of Strategies for Planning and Linkage Development

Based on the background assessment of the decision system and context, and on the goals and resources of the initiating agency, a strategy to develop the system should be developed.

Two steps that precede strategy development are identification of the gaps in the current system and organization of resources to address problem areas. The core of the strategy specifies the emphasis, scope, and sequence of steps, and the roles of agencies in the process.

Conscious, explicit efforts to develop a strategy are important to the success of the development of the linkage system. Even though the strategy may be altered based on later information, an initial effort to specify where the project is going and how it will get there will help add consistent choices about development activities. The periodic review and modification of the strategy for development of the planning and linkage system is important to continually acquire resources for accomplishing developmental tasks.

Identifying Gaps in the Current System. The assessment of the political resources (authorities and information of actors), the decision-making structures (roles and responsibilities of actors), and technical resources (judgment and analytical capability of actors) in the decision system defines the existing elements of the system. In comparison to the elements of a well developed system described in the last section, the gaps can be identified. The gaps in the system can occur in the functional ability to plan and coordinate decisions or in the scope of occupations and decision areas covered by the system. Developing the ability of the system to accomplish functional tasks, such as projection of future requirements for manpower and coordination of decision-makers, should be accomplished prior to increasing the number and scope of issues addressed in the decision system.

Organizing Resources. An important part of the preliminary strategy development activity is organizing a core of resources for planning and linkage. To acquire resources, the formation of key alliances may be necessary. At the very least, an agency contemplating linkage development will require an internal core management structure to take responsibility for carrying out the assessment and strategy development activity. Some of the linkage projects utilized outside resources and set up steering committees to plan the strategy.

In addition to the administrative responsibility of the management of linkage system efforts, careful assessment must be made of the agency's political and technical resources needed to carry out the tasks. Precise quantification of the amount of resources needed is exceedingly difficult to determine, and will vary from system to system, depending on the existing amount and distribution of resources among the different agencies and interest groups, the previous planning and linkage activities, and the values and orientations of different groups toward cooperation. The astute judgment required for this political assessment is very critical to the development of the decision system.

Earlier chapters of this report have identified some of the resource categories to be assessed and some preliminary indications of minimum capability in those categories. To summarize, important resources include administrative authority, access to information, political coalitions, technical expertise, discretionary funding sources, and legitimacy. To achieve technical tasks, a core interdisciplinary staff of at least three to five analysts is required. Political resources depend partly on technical skill, but also on location and other factors.

Technical skills and resources of an agency have been found to be important to development of linkage systems only at certain stages of development. In decision systems or sectors which are not well developed, technical skills can provide initial resources to demonstrate the credibility of an agency's participation in health manpower decisions. Also, after the basic linkage mechanisms among agencies have been established, and the interorganizational role relationships and identities have been worked out by policy-makers, substantive policy issues will require considerable research and analysis.

Organizations which provide these skills can play a significant role in the on-going functioning of the decision system. Likewise, political organizing skills are more important at some stages in the development of the system than at others.

If resources are not sufficient or do not match the developmental gaps in the system, and if outside agencies have significant complementary resources, the formation of alliances with such agencies is an approach to strategy development. A number of the linkage projects used interagency task forces as management committees to develop the linkage system. The combined resources of the two or three agencies in different sectors provided a broader base and greater resources for coordination of the system than any one agency could have provided alone. Coordinating a small group of core agencies in different sectors of the system was an easier way to coordinate among sectors than attempting to coordinate a larger group. For this approach to work, however, each core agency not only had to share planning responsibility, but also had to establish a focus for coordination within its own sector.

Strategy Development. With a core management structure and sufficient resources, strategy formation to develop a linkage structure is a matter of designing steps to fill the gaps in a systematic way. Findings from linkage projects offer some hints about the effectiveness of different aspects of linkage development strategies.

As indicated earlier, initial development of the system is best directed toward instituting and refining the basic functions of the decision system rather than expanding the breadth of substantive policy issues addressed by the system. States which emphasized the development of decision functions in their linkage projects generally focused their efforts narrowly on one or a few occupational categories (often nursing). The narrow scope enabled them to develop methods and to build credibility for additional development.

Also, as described in Chapter 6, the strategy of the linkage project determines the developmental emphasis. Projects which emphasized development of the planning process and the decision-making structure were generally more successful at impacting upon decisions than those which emphasized the technical aspects of planning. Although additional, more systematic research is necessary to verify these findings, the implication is that only minimum technical planning is desirable until a basic decision structure is in place. The planning activity might include a first generation of a health manpower plan based on existing data. Heavy emphasis on data is the long way around to develop a decision system, and is potentially competitive with existing data gathering activities of the CHSS. Linkage projects which focused effort on analysis, planning, and decision-making tasks found that incorporation of data gathering capacity of the CHSS into the functioning of the system was readily achieved with little cost.

Although some linkage projects devoted efforts to technical tasks to try to gain leverage on the system, the approach recommended here is to gain leverage more directly by forming coalitions with core state agencies. If that avenue is not available because the state agencies do not have sufficient resources or because they are too closely aligned with (captured by) resistant established interests, a wider process of political organization is recommended. Some of the more successful linkage projects used mechanisms, such as Governor's Conferences, to raise awareness of problems, and they also established widely representative task forces to begin to address the policy issues. In states where no prior development had taken place, a large planning committee with subcommittees not only helped formulate a first generation of information for decision-makers, but also set up a forum for influential actors to begin to interact and develop initial interorganizational consensus about priorities and approaches to substantive policies. On the other hand, a number of states had already worked out the basic relationships among actors, and had established a number of coordination mechanisms for policy-making, planning, technical analysis, and data gathering. These states were in a position to place heavy emphasis on the refinement of methods for planning.

Once basic functional elements of the system have been developed, growth of the system entails the application of the methods to a wider scope of substantive issues. While early development of the functional elements of the system can benefit from staying clear of the "fishbowl" of intensely political issues, the policy relevance of an issue may be sufficient cause for adding it to the system, once the base of support has been established. Other factors include data availability, and the availability of a strong core agency to coordinate planning and policy making.

Planning Roles. Planning agencies generally have technical resources to do planning, analysis and information gathering activities, and some have responsibility to provide staff assistance to top policy committees. Because of their decision-making resources, planning agencies for higher education, vocational education, health and manpower have a particular responsibility for development of the decision system.

The role of planning agencies in the decision system either separately or collectively needs to be clarified as part of the process of system development. Planning agencies often assume a role as producer of technical analyses of substative policy issues, or as producer of broad analytical/ philosophical documents that attempt to comprehensively investigate future courses of action in any substantive area of decision-making. Such technical planning roles have often tended to yield little more than extensive volumes on the shelves of decision-makers. To remedy this situation, planning needs to be viewed as connected to, and directly supportive of, substantive decision-making.

To be supportive of decision-making, planning has to be distinguished from decision-making, and a mechanism to connect planning directly to decision-making must be established. The decision-makers are those actors which have responsibility for policies and programs to provide substantive services, such as health care, education, or employment/personnel services. Decision-makers allocate resources and manage operations to obtain both immediate and long term objectives. Planning is not decision-making, and planners cannot expect to assume the role of allocator of resources without jeopardizing their planning roles. Planning roles are more facilitative and future-oriented. Planners contribute to decision-making by analyzing the consequences of alternative courses of action on the overall objectives and courses taken. Planners must act as long range "eyes and ears" for decision-makers who are concerned with more immediate tasks, but decision-makers must set the course of plans because they will be the ones to implement them. Planners influence decision-makers, but planning is essentially subordinate to decision-making.

For planning to have actual use in decision-making, there must be a direct and immediate decision mechanism with which to connect. To best support policy objectives, a planning staff should work directly for the key decision-makers. For this to occur, decisions must be made in a sufficiently coherent administrative structure so that direct interaction is possible. Health manpower issues are broad and there typically is no single policy czar to make decisions; decisions generally are not even made in one sector, but often cut across sectors. Hence, two options exist for planning to directly connect and support decision-making. A central administrative coordinating mechanism can be utilized for decision-making and planning input. Decentralized policy-making mechanisms for different sectors (e.g., SHCC or Higher Education Board) can each have planning staff which are, in turn, all coordinated.

A summary of recommendations on strategy development follows.

Recommendation 3: Explicit specification and periodic review of a strategy for development of a planning and linkage system is central to the success of developmental goals.

3.1 The initial step in strategy development is the identification of the gaps and developmental requirements of the decision system. Developing functional tasks, such as methods for planning or mechanisms for coordination, is the first and most essential requirement, followed by expansion of the substantive scope of decision issues addressed.

3.2 Resources to address developmental problems must be obtained from the linkage agency and through alliances with other agencies. The initial requirement is a management structure to conduct the assessment and strategy development.

3.2.1 The developmental requirements and gaps should determine the type of resources needed to launch a linkage strategy. Some systems require technical skills, and others require organizational development skills.

3.2.2 The agency's current resources and the availability of resources in other agencies should determine the types of alliances that are needed and the structure to manage the core resources.

3.3 Strategy formulation should be the design of a systematic sequence of steps to fill the gaps in the system.

3.3.1 Aiming at functional gaps first, emphasis on development of the decision structure and process in the context of a narrow substantive issue is likely to be a more successful strategy than emphasizing technical planning.

3.3.2 Although technical expertise can help develop leverage, the process of coalition building is a more direct approach to linkage development.

3.3.3 Once the basic decision structure and first generation of planning have been accomplished, refined methods for obtaining data and analysis are needed.

3.3.4 After the functions of the decision system are operational, the scope of issues should be expanded, depending on the policy relevance of each issue and the capability to address an issue.

3.4 Planning agencies have particular responsibility for development of a decision system in which the role of planning is clearly defined as supportive of policy and management decision makers who allocate resources.

- 3.4.1 For planning roles to be effective, a coherent administrative structure must be present to focus the decision process.
- 3.4.2 For planning roles to be effective, planners must report to and work directly with the key decision-makers and policy committees in each sector in the decision system.

7.2.3 Organization and Management of System Development Efforts

The operation of the efforts to develop a planning and linkage system will be concerned with the organization and management of resources at each step in the sequence. The acquisition of resources, the identity of project effort, and the organization of the staff are factors to be considered.

Resource Acquisition. As has been indicated, at each step in the development process, different resources will be required. Initial political and organizational skills can be obtained from existing agency resources and through alliances with core agencies. Technical resources are often available in planning or statistics agencies, but these resources must be freed up and directed toward health manpower concerns to be of any use to the decision system. The formation of a planning or policy committee can provide the necessary focus of effort, and can create a demand for information from existing sources. Where existing resources are not available, seed money from the state government, the Federal Government, or private foundations may be required to obtain technical skills.

It is possible that no one of the planning agencies which have concern for health manpower problems will possess sufficient resources to develop separate health manpower planning capabilities. The different planning agencies, however, may be concerned with different, but related, aspects of health manpower planning. Thus, higher education planners might be planning for enrollments in health occupations education; health planners may be concerned with staffing requirements for health services; and manpower planners may be concerned with employment opportunities. *Pooling of resources* from these various locations can often provide a sufficient stock of skills to accomplish comprehensive planning goals of all the agencies at marginal extra cost. The dilemma is that it is most beneficial to pool resources early in the linkage process in order to develop basic methods, but the parties are often reluctant to contribute resources to a joint effort which might otherwise have been directed toward their own separate objectives. One possible solution to this dilemma is to first establish coordination at policy-making levels in order to provide common objectives for the planners and a cooperative umbrella for joint planning. Also, joint ventures and temporary task forces can be created with limited, but shared, goals among the planners, such as the solution to methodological problems (i.e. projection methods) or the development of a comprehensive health manpower plan.

Once the basic elements of the decision system are in place, there are several options for *institutionalization of shared efforts*. In one option, each planning agency can attend to policy concerns in its own sector with coordination between sectors established by a linkage role (i.e. a program manager for health manpower planning who relates to all pertinent planning agencies), or a linkage committee. The greater the importance of a health manpower issue in a state, the greater will be the coordination required; a very high priority might mean the establishment of a separate department located in a neutral agency (i.e. Department of Administration) to plan and coordinate policy for all substantive health manpower decisions. Another option for on-going coordination of health manpower planning among separate planning agencies is overlapping of staff of separate policy committees.

Project Identity. One choice which should be carefully made and periodically reviewed by an individual organization or group of organizations trying to build a decision system is the identity of the development effort. This is a symbolic choice with real implications for the organization and allocation of resources for goals of individual agencies or for the goals of the whole state. Activities can be attributed to a project (a new separate organization), to individual agencies, or to the state government as a coordinator for the health manpower decision system.

System (whole state) identities are desirable because they symbolize a comprehensive coordination of the interests and resources in the state. The system identity thus provides an incentive for cooperation. System identities are difficult to achieve unless each sector is well coordinated and the separate roles and functions for health planning, education planning, manpower planning, etc. can be defined and distinguished.

Agency identity is more appropriate for less developed systems where planning agencies are carving out roles for themselves in their specific area of concern. Enhancement of the coordination and consolidation in separate sectors is prerequisite to linkage across sectors. To the extent that planning agencies can become foci for decision-making in their principal area of policy concern, linkage among planning agencies will be an effective coordination of the system.

A danger in the pursuit of agency identity in health manpower decision-making is an unbalanced system. A higher education or health planning agency which develops its own identity for health manpower planning, while the other does not, will tend to dominate coordinated planning efforts. A tilt in decisions toward the needs of education or service at the expense of the other can be detrimental to decision outcomes. For example, some states which have experienced enormous growth in physician training are beginning to see the effects of unbalanced manpower decisions in terms of oversupply and increased costs.

Where there is no balance among sectors for whatever reason, alternative *steps should be taken to balance the planning inputs to decisions*. For example, some states with strong higher education planning agencies have facilitated the identity and resources of state health planning agencies by subcontracting for health manpower staff in the SHPDA or by transferring data systems to the health department. By doing so, more emphasis has been given to health manpower in the SHPDA, and subsequently more coordinated emphasis on health manpower has been established in the statewide network of HSA's. The combined effort has strengthened the whole system far in excess of the initial investment, and because it was closely aligned with the higher education agency, that agency has strengthened its own position.

Project identities are not generally an effective use of resources because a temporary organization, or an entirely new one, will have neither a base for building or an easy way to maintain the continuity of the image developed. In dire circumstances, however, where the identity, reputation, skill, or outlook of existing agencies may be negative, project identity may provide the best avenue to develop the decision system.

Staff Organization. Staff organization for development of the planning and decision system has to satisfy constraints imposed by the amount of resources, the location of resources, the strategy for coordination, and the technical needs for analysis and planning.

Development of technical methods for planning requires an interdisciplinary staff of at least 3 to 5 analysts, with a senior researcher as staff director. Without substantial priority and commitment on the part of a planning agency, or without seed money from outside sources, this level of effort is difficult for one agency to maintain. Therefore, as suggested earlier, pooling of resources may be necessary to initially develop a technical staff. This approach fits nicely with the linkage strategies aimed at coordination of planning and policymaking which have been suggested. Once the basic methods have been developed and refined, such a concentrated technical effort will be required only for periodic updating of methods to keep pace with general advances in planning techniques. The operation of various data gathering, analysis, and committee staffing tasks can then be handled in a more decentralized fashion with some degree of coordination provided by overlapping staffs, technical linkage committees, etc.

A summary of recommendations on implementation and management of a linkage strategy follows.

Recommendation 4: Implementation of a linkage strategy to develop the decision system requires continuous management of resources, skills, and images at each step in the sequence.

- 4.1 Resources required for linkages can be obtained from new sources or by pooling the resources of planning agencies. Management of resources can be centralized in an umbrella structure or decentralized with intensive coordination among sectors.

- 4.2 The image and identity of the linkage development effort is an important resource which should be managed in a way that is consistent with the overall strategy.
    - 4.2.1 Identification with system goals is the ultimate objective, but it cannot be easily achieved until each sector has consolidated its own identity. Thus, a health planning agency might coordinate the determination of demand for health manpower, and an education planning agency might coordinate the supply and production of manpower.
    - 4.2.2 Agency identity for planning agencies can help consolidate health manpower identity for each sector.
    - 4.2.3 Care must be taken to balance the sector identities in the system in order to insure balanced decision-making.
    - 4.2.4 Project identity is viable only where the existing agency identities are negative.

4.3 A core technical staff is required for technical development. Routine management of the decision system can be handled in a decentralized manner.

7.3 Recommendations for Federal Health Manpower Planners and Policy Makers

Promotion of the concept of linkage systems to enhance the utility of health manpower planning is important for Federal Agencies as well as for state agencies. Through the numerous Federal programs in the areas of health professions education, vocational education, health services, Veterans hospitals, manpower employment and training, and both health and higher education planning, the Federal Government quite often establishes constraints and sets the tone for health manpower decisions.

Health manpower is nearing the end of a period of rapid growth in production capacity, and in most areas, aggregate shortages no longer exist. Instead, the major concerns have turned to relative geographic and specialty maldistribution of manpower and educational production capacity. Furthermore, because of inflationary pressures and perceived waste in government programs, public demands for cutbacks and better management of available resources are growing. In the current environment, better planning and management of government resources is a necessity. The development of planning methods and linkage systems to better formulate policies and utilize planning should therefore be an important priority of the Federal Government.

Health manpower planning is primarily a state responsibility, because a large portion of the educational resources are contained in state supported institutions and because a large proportion of the health care work force have limited mobility across state lines. Thus, when instituting health manpower policies, the Federal Government should promote and utilize the already established state structures for health manpower planning and decision-making.

Due to migration and the existence of highly specialized care, there is also some need for a wider planning area than a state. Nevertheless, very little interstate planning was observed in this evaluation. *The Federal Government has a role in promoting interstate planning and in conducting broad national planning for health manpower categories*, especially the more mobile, highly specialized, scientific and tertiary care personnel. More directly relevant to states, *the Federal Government has a role in health manpower planning to promote state planning by providing leadership for coordination of existing resources, and by providing research and development support for development of planning techniques and instituting them in the states.*

Coordination of Existing Health Manpower Planning Resources. Although the Federal bureaucracy was not directly investigated in this evaluation, evidence from the states indicates that coordination among Federal agencies, whose policies and programs affect health manpower decisions in the states, is quite limited. For example, on the basic level of planning data, different codes are used for manpower categories by different Federal agencies. Also, for major expensive decisions, such as the initiation of a new medical school, if one agency supplies the funds (e.g., the V.A.), the decision will likely carry in spite of recommendations to the contrary by planners or other Federal agencies.

Better coordination among Federal agencies will serve two purposes for states. It will reduce the sometimes conflicting outcomes of different programs, and more importantly, it will provide necessary leadership for the states to emphasize health manpower planning and decision system development. By collaborating at the Federal level, the current program priorities can be focused to facilitate development of linkages using existing resources. If HRA emphasizes planning in its health manpower efforts, and health manpower in its planning efforts, the programs at the state level will be more likely to perform health manpower planning. The same is true for OE in higher education and vocational education planning, and for DOL in manpower employment and training, etc. Furthermore, if all Federal agencies emphasize collaboration among state agencies in the implementation of programs, and provide literature and technical assistance on what mechanisms are available and how they can be instituted, the incentives and the means to improve decision-making with current resources will be enhanced. The Federal agencies have to set the example by coordinating their efforts first.

Since this study has not investigated the organization of Federal health manpower programs, no specific mechanism for Federal coordination can be recommended. It is suggested, however, that the Federal Health Manpower Programs be delegated the task of recommending to OMB or some other appropriate authority what permanent linkage mechnism(s) should be established to coordinate Federal Health Manpower Policy among the agencies. The mechanism for such a study might be an interagency task force of the agencies relevant to health manpower policy.

It is recommended that the Health Resources Administration take responsibility for health manpower planning and decision system development by initiating the Federal interagency task force to implement Federal health manpower linkages. To insure consideration of both planning and manpower education concerns, the task force should be staffed by both the Bureau of Health Planning and the Bureau of Health Manpower. In the spirit of cooperation, other agencies should be requested to contribute staff to the task force as well.

The permanent linkage mechanisms which are established as a result of the task force effort should have as goals the coordination and sharing of current resources of Federal programs, the development of decision systems in the states, and the continued allocation of Federal money toward R&D in the areas of planning and linkage system development to support these goals.

Research and Development Support for Planning and Linkage Development. In addition to guidance of decision system development in states by coordination of existing Federal programs, the Federal Government should facilitate linkage system development by providing support for research and development in the area of planning and linkage systems for health manpower.

The findings of this evaluation indicate a modest enhancement of the decision systems of states with linkage contracts over the matched states without linkage contracts. This may have been due to self selection of many of the more effective linkage projects, which had significant motivation to seek out linkage contracts, as well as prior development of some aspects of a decision system. It appears that the many concurrent developments in states, such as implementation of CHSS manpower components and Section 1202 Higher Education Planning Commissions, provided an impetus for system development comparable to that of the linkage project. More research and development is needed to clarify and elaborate the causes of effective health manpower decision-systems.

The findings of this evaluation do not suggest the reestablishment of a linkage program of the scope of the past program. Because of the varying ways in which the program was implemented from region to region, however, it is difficult to sustain any definitive conclusion. Although there is clearly merit in the concept of linkage as the development and integration of components of a decision system, only a few of the projects used the system development approach. The implementation of a linkage program for development of data or planning techniques is redundant to other Federal programs, and the implementation of a linkage program as merely coordination is a contradiction. A separate program for coordination tends to create one more element in an already fragmented system. Based on the fact that many of the elements of the decision system are already being developed, the idea here is that the linkage concept should be used to facilitate system development in the context of current efforts with supplementary resources for specific technical or methodological products.

Federal resources should be targeted toward developing core resources and providing impetus for health manpower planning in states with both need and motivation to improve their systems. Federal resources are most applicable to research and development tasks in the absence of initial resources in the states, particularly in the areas of technical planning development. Very little financial resources are required to form the basic relationships and alliances in the system. Mostly what is needed are time, interpersonal skills, good will, and some incentive for cooperation. The Federal Government can facilitate the process by ordering the priorities and rewards in its current programs to increase incentives for cooperation. Development and utilization of technical skills and planning techniques in states require fundamental research capability. Where the skills exist, pooling of resources is a viable strategy to attain the necessary concentration of effort to institute state-of-the-art methods for analyzing health manpower problems. If the skills do not exist, and other factors are favorable, seed money should be made available for the start-up of basic planning techniques.

A second R&D role of the Federal Government is the advancement of the state-of-the-art of both manpower and decision system development and management. Basic research into these two areas should continue so that knowledge can be cumulative. Better projection methods, better concepts of the decision system, and better indicators of planning and system improvement for management are all needed. In addition, explicit effort and funding to disseminate information should continue through publications and through development and utilization of specific technical assistance materials to teach planners new techniques in analysis, system diagnosis and intervention, etc. Current planning R&D in the Federal Government rightly emphasizes technical planning. Here, it is recommended that an additional emphasis be given to research on the utilization of planning in the interorganizational system of decision-making for health manpower.

Avenues for Future Research. No research and evaluation effort is complete without specification of what steps might be taken next to build upon the findings.

This evaluation has begun to specify elements in the interorganizational structure and process of decision-making for health manpower. The variables and measurements have been broad in their specification in order to capture a broad picture of a quite complex system. Two approaches to expand on the basic research in this analysis are recommended. First, a number of the variables in the framework were not the subject of in-depth analysis with the data from the 22 states. More in-depth study of the factors describing linkage networks and decision-systems will yield a better understanding of the relationships of these factors to development of effective decision-systems. The cost of such an analysis is marginal because data from the 22 states have already been obtained and the basic framework for analysis has been developed. An analysis of this sort will lay the groundwork for continued research in the area of interorganizational decision-systems by specifying hypotheses about the dynamics of behavior in these systems. The second approach builds on the first by more carefully specifying variables, indicators, and measurements used. While the initial research has helped identify important variables for system behavior, a more carefully specified research design will clarify the understanding of the system.

In a follow-up research effort, some of the key relationships postulated here can be tested in the context of more controlled design to obtain better supported results.

The research in this evaluation also has important applications for management and planning in interorganizational decision systems. Using the tools of social science, some important concepts and variables for management have been identified. Dissemination of the concepts to planners and program leaders is a first step toward application of the results. Technical assistance manuals and training materials should be developed to communicate the results.

More direct utilization of the results and continuing education about the management of interorganizational planning systems can be accomplished by development of an action research change model. Based on refined methods and better specification and instrumentation of variables and data gathering, research on the status of any particular system can be fed back to managers to identify areas for improvement and strategies for change. Development of instruments for self study and training of change agents to facilitate system development is a much needed application of this research.

A summary of recommendations for Federal health manpower planners follows.

Recommendation 5: In order to better use the available resources, and to better serve the educational and service needs of the public, the Federal Government should place a high priority on development of planning methods and linkage systems in the context of current decision-making capacity development efforts.

Recommendation 6: The primary focal point for health manpower planning should be at the state level. Local, interstate and national planning are supplementary to state level planning.

Recommendation 7: The principal role of the Federal Government in health manpower planning should be to conduct broad national planning (especially for categories of highly specialized scientific manpower), to promote regional interstate planning, and to facilitate state level planning.

Recommendation 8: The Federal Government should take concerted action to coordinate among its policies and programs related to health manpower in order to facilitate and promote the development of planning and linkage systems in the states.

8.1 By emphasizing the development of integrated decision systems in various health, education and manpower programs in DHEW and DOL, and by providing literature and technical assistance in a coordinated Federal effort, state decision systems can be promoted at marginal extra cost.

The Federal level health manpower programs were not a subject of this evaluation so a complete study of Federal Coordination is recommended below (8.2). However, examples of programs which should emphasize promotion of health manpower planning and linkage systems include the following.

8.1.1 The Bureau of Health Manpower should emphasize planning and coordination among its programs to support health occupations education.

8.1.2 The Bureau of Health Planning should emphasize health manpower in HSA and SHPDA planning, and should provide literature and technical assistance to promote interorganization decision systems in all its health planning.

The Centers for Health Planning should develop and disseminate Technical Assistance materials to help HSA's and SHPDA's diagnose and change their planning and linkage systems. On-site expert advice should also be provided to help carry out system development plans.

8.1.3 The National Center for Health Statistics should emphasize the implementation of the manpower component of CHSS, and promote close coordination of the data systems with planners and policy-makers in state agencies.

8.1.4 The Veterans Administration should coordinate its health manpower training efforts with other Federal planning programs for manpower and with state and local health manpower planners.

8.1.5 The Office of Education should promote the development of education and manpower planning and coordination for health occupations through its grants to Higher Education Planning Commissions and Vocational Education Planning in states. Efforts should be made to coordinate these programs with other Federal programs.

8.1.6 The Alcohol, Drug Abuse and Mental Health Administration should promote planning in the manpower development efforts in NIDA, NIMH, etc., and should take steps to coordinate its efforts with other Federal health manpower planning programs.

8.1.7 The Department of Labor should promote planning and coordination of its manpower employment and training programs with other health manpower and training programs. It should facilitate the adaptation of its manpower projection methods to suit the special needs of planners and policy-makers in health occupations.

8.2 To accomplish Federal level coordination for health manpower planning, the Health Resources Administration should initiate an Interagency Task Force to study and recommend to OMB (or some other appropriate authority) the form and structure of permanent health manpower policy linkage mechanism(s).

8.2.1 The task force should be jointly staffed by BHM and BHP, and assisted by staff from OE, DOL, etc.

8.2.2 The goal of the permanent Federal linkage mechanisms should be to identify, coordinate, and share current resources of the Federal Government, to facilitate the development of state health manpower decision systems, and to continue research development and technical assistance to support these goals.

Recommendation 9: The Federal Government, through its health manpower related programs, should facilitate linkage system development and provide support for research and development in the area of planning and linkage systems for health manpower.

9.1 Federal resources in HRA, OE, VA, and DOL should be targeted at developing core resources and providing impetus for health manpower planning where needed.

9.1.1 Research and development grants to develop and implement basic methodologies for determining health manpower supply and requirements should be provided where no other technical resources are available to the state.

9.1.2 Such R&D seed money should only be available to states which have the necessary groundwork of organizational relationships and a well conceived strategy for development of the decision system.

9.2 The Federal Government should continue to support research to advance the state-of-the-art in health manpower planning.

9.2.1 Such research support should give additional emphasis to methods for development of inter-organizational decision systems.

9.2.2 The Federal Government should place additional emphasis on dissemination of state-of-the-art methods for health manpower planning, including publications and development and use of technical assistance materials to transfer information to planners in the field.

Appendix

RESEARCH METHODS

Appendix

RESEARCH METHODS

This appendix contains details of the research steps outlined in Chapter 1 of the "Evaluation of State Linkage Systems for Health Manpower Planning and Educational Resource Development." Guided by an expert advisory group, the research process contained three major steps -- research design, exploratory analysis, and comprehensive analysis. The elements of each step are listed below.

- Research Design
    - Objectives of the study
    - Major research questions
    - Preliminary framework for analysis
    - Site selection
    - Site visit procedures
    - Discussion guides
- Exploratory Analysis
    - Site reports
    - Updated framework for analysis
    - Site selection for linkage and matched non-linkage states
    - Site visit procedures
    - Respondent selection
    - Discussion guides
- Comprehensive Analysis
    - Site reports
    - Analysis

The body of the final report contains information on a number of the elements listed, including the objectives of the study and the major research questions (Chapter 1), the updated framework for analysis (Chapter 2), and the comprehensive analysis (Chapters 3 through 6). Additional details of data gathering methods are presented in the following pages. First, the site selection procedures for selecting representative linkage states in Phase One and for selecting linkage and matched non-linkage states in Phase Two are presented. Discussion guides and respondent selection for each phase are also presented, followed by outlines of the site reports for each phase.

A.1 Site Selection

A.1.1 Phase One Stratification and Selection of Linkage States

During the exploratory phase of the evaluation study, the goal of site selection was to obtain a representative sample of linkage states. By selecting states which varied widely on significant contextual and linkage contract factors, the most important variables associated with structure, process and outcomes of linkage development efforts were to be identified.

Variables for stratification had to not only capture the essential features of the linkage effort, but also had to be measurable from secondary source materials. With these constraints in mind, the following variables and indicators were identified.

	Variable	Indicator
Linkage Project Descriptors:	Project Location	- Health Agency - Education Agency - Other State Agency - Outside State Government
	Type of Contract	- Standard - Modified
	Size of Contract	- $ Amount

	Variable	Indicator
Contextual Descriptors:	Health Planning Experience	- Was there a Health Plan prior to Linkage?
	Data Availability	- Is there a CHSS Manpower Component or comparable data base?
	Health Manpower Supply	- Population/Physician Ratio - Population/Nurse Ratio (compared to national average)
	Population Characteristics	- % Urban (using Census Bureau data) compared to national average

Based on data from linkage project documents, such as contracts and progress reports, and on data from published sources (Census data, Health Resources Statistics), each state was classified on each variable. To reduce the number of variables, intercorrelations between variables were identified as follows.

First, the size of the contract proved to be strongly related to the type of contract (gamma = .85; Fisher's exact, p = .056). Nine of eleven standard contracts were in a range of $210 to $275 thousand, while eight of eleven modified contracts were outside the range.

Also, the characteristics of each state's data availability and planning experience revealed a strong relationship (Fisher's exact, p = .005). All fifteen states with planning experience had some data availability, while three of seven states without planning experience had strong manpower data capability. Because the large majority of states had some data availability, the more discriminating of the two indicators is the presence or absence of planning experience.

Comparison of manpower supply data for physicians and nurses in linkage states indicated no linkage state with

Figure A-1

TYPOLOGY FOR SITE SELECTION
(Phase I)

State Context Variables / Linkage Contract Variables		Supply						
		High Number Physicians & Nurses		High Number Nurses Low Number Physicians		Low Number Physicians & Nurses		
		Planning Experience:		Planning Experience:		Planning Experience:		
Location	Type of Contract	Prior Plan	No Plan	Prior Plan	No Plan	Prior Plan	No Plan	Total Number
Health	Std	Maryland (CHP)		Ohio (CHP) Wisconsin* (CHP)			Michigan	4
	Mod	Arizona		Kansas (CHP)	Nebraska (CHP) S. Dakota* (CHP)	Tennessee		5
Education	Std	Minnesota New Jersey*				Kentucky		3
	Mod						Virginia*	1
Other State Agency	Std	Massachusetts* (CHP)		Georgia (CHP)		Missouri (CHP) Arkansas (CHP)		4
	Mod				Iowa	N. Carolina (CHP) S. Carolina*	Mississippi	4
Outside Government	Std		Hawaii					1
	Mod							0
Total Number		5	1	4	3	6	3	22

(CHP) indicates contract was in a Comprehensive Health Planning Agency.

* indicates states selected.

relatively large numbers of physicians (below 700 population/physician ratio) that had large numbers of nurses (above 275 population/nurse ratio). For linkage states, three categories--Relatively High Number of Physicians and Nurses, Relatively High Number of Nurses and Relatively Low Number of Physicians, Relatively Low Number of Physicians and Nurses--captured all the variance in the supply variables.

Comparing the supply variable with population characteristics of the state revealed that, in linkage states, the predominantly urban states (above 75% urban using Census Bureau classification) all had relatively large supplies of both physicians and nurses, while predominantly rural states had a large supply of nurses or neither. Using the supply variable only, therefore, captured all the variation in population characteristics as well.

Based on the findings from intercorrelating variables, a reduced set of variables to describe linkage states included:

- Linkage Contract Descriptors:
  - Project Location
  - Type of Contract
- State Context
  - Health Planning Experience
  - Health Manpower Supply

A typology of linkage states based on the reduced set of variables is displayed in Figure A-1. This figure revealed a wide variation in characteristics of linkage projects; only 4 cells contained 2 states, and no cell contained more than 2 states.

To insure wide variation in the states for exploratory visits, one state was selected for each row and column in the typology. Since there was more than one feasible set of site selections, secondary criteria for selection included the following:

1. Select from different DHEW regions
2. Select those within CHP agencies and those outside of CHP agencies
3. Do not select significant outliers (e.g. Hawaii was not selected)
4. Select states for scheduling convenience (e.g., nearby states can be revisited more readily if necessary)

Based on the above criteria, the following states and their Regional Offices were visited during the exploratory phase of the project.

Region	State
I	Massachusetts
II	New Jersey
III	Virginia
IV	South Carolina
V	Wisconsin
VIII	South Dakota

A.1.2 Phase Two Stratification and Selection of Linkage and Matched Non-Linkage States

The site selections for the second phase of the study used a stratification procedure similar to that used for Phase One. However, in this phase, the objective of the selections was to identify both linkage states and matched non-linkage states for site visits. The matching states were selected on contextual variables found to be significant to linkage development in Phase One. By selecting matching states comparable to the linkage states on general contextual characteristics and on specific health manpower decision context characteristics, a control group was established to ascertain the impact of concurrent developments on the goals of the linkage project. Thus, the impact of the linkage projects themselves could be accounted for.

The states were stratified on the following variables for site selection. First, two general contextual variables were used.

1) Manpower Production of Physicians and Nurses. States above the median 150 physicians and 1500 nurses graduated each year (in 1975) were classified as having high production capacity, while those below on each measure were classified as low. Four resulting categories were: those high on both, those high on one, those high on the other, those high on neither physicians nor nurses. As seen in Figure A-2, most states were high or low on both.

2) State Fiscal Resources. Based on the study, "Measuring the Fiscal 'Blood Pressure' of the States -- 1964-1975" by the Advisory Committee on Intergovernmental Relations, a 2 dimensional index of the fiscal capacity of states was adopted. The index measured the "adjusted" tax burden in the states as a percent of all sources of state income. The index also incorporated the 10 year growth or decline of taxes and ranked all states. Four relative categories of states were: high and rising, high and falling, low and rising, and low and falling.

Two other variables describing concurrent health and education planning efforts were used to match non-linkage states to linkage states.

3) Statistics. If the state had implemented a Cooperative Health Statistics System Manpower Component, it was an indication of some effort to incorporate many of the data sources (e.g. boards of registration, professional associations) into a comprehensive effort. Also, data are important building blocks of planning and decision efforts, so that states with existing systems would have been expected to accomplish some of the tasks of decision system development. Comparisons of linkage versus non-linkage states therefore had to take this variable into account.

4) Education Planning. Most states established education planning commissions (authorized under Section 1202, PL92-318, Higher Education Amendments of 1972) in 1974. A distinction, however, in the extent of planning done previously was whether the 1202 commission was established in a new agency or in an existing or augmented agency. A second distinction was in the authority of the higher education agency in the state. States with governing boards generally have broader authority than states with coordinating councils. States with coordinating councils by and large had existing planning mechanisms prior to 1974. A large proportion of 1202

commissions in existing agencies were in states which had coordinating councils. Also, a very large proportion of states with coordinating councils had 1202 commissions in existing agencies. The conclusion to be drawn was that states with coordinating agencies were more active in education planning, while states with governing boards had broader budgetary authority.

To aid in the selection of the matched states, an additional variable describing the general context was also considered.

5) Manpower Supply of Physicians and Nurses. Each state's ratio of population/physicians was compared to the national figure of 680 and the ratio of population/nurses was compared to the national figure of 262. Four categories resulted: relatively high number of physicians and nurses, high number of physicians and low number of nurses, low number of physicians and high number of nurses, and low number of physicians and nurses.

Each of the 50 states was arrayed on the four variables in Figure A-2, with linkage states indicated. Inspection of Figure A-2 reveals a very close distribution of linkage states and non-linkage states on the 4 variables. The selection of 11 linkage states for Phase Two was intended to reflect as closely as possible the distribution of all 22 linkage states and the distribution of all 50 states on the stratification variables. Also, the selections were made so that at least 5 of the linkage states had non-linkage states matched on the selection variables. States selected and their characteristics are shown in Figure A-3. As shown in the figure, the distribution in the sample selected was very similar to the distribution for all linkage states and that for all 50 states.

A.2 Field Methods

A.2.1 Phase One Site Visit Methods

The primary source of information in the study was data gathered during site visits, especially data from interviews with participants in the state health manpower decision process. Site visits, conducted by two-person teams, lasted 3 to 4 days in each state. The site visits required

Figure A-2

TYPOLOGY FOR SITE SEL

(Phase II)

Fiscal Capacity \ Health Manpower Production		High Number (++) MD's & RN's		High Number MD' Low Number Rn's	
	Education	CHSS	No CHSS	CHSS	No CH
High & Falling	Coordinating Council		Ind.		
	Governing Board	Wisc. #			
	Neither				
High & Rising	Coordinating Council	Mass. # Va. # Minn. * Mich. ✓	Md. * Ill. ** N.Y. Calif.		
	Governing Board	Penn.			
	Neither				
Low & Falling	Coordinating Council	Tenn. ✓ Tex.			La.
	Governing Board	N.C. * Fla. ** Iowa ✓	Georgia *		
Low & Rising	Coordinating Council	Mo. *	Ohio * Kty. ✓	Neb. *	
	Governing Board				
# Linkage		9	4	1	0
# Total		12	8	1	1

Legend

* = Selections

** = Matches

= Linkage states, Phase I

✓ = Linkage states, not visited

CHSS = Cooperative Health Statistics System manpower component

ELECTION

's (+-) 's	Low Number MD's (-+) High Number RN's		Low Number (--) MD's & RN's		# Linkage	# Total
HSS	CHSS	No CHSS	CHSS	No CHSS		
	Wash.			Hawaii * S. Dak.	1	4
			Utah		1	2
				Verm.	0	1
		N.J. # Conn. **			6	10
	Miss. *		Ariz. * Maine ** W. Va. R.I.		2	6
				Del.	0	1
	Alabama		Colo. Oreg. Ark. *	Alaska N.H. Ok. **	2	10
				Idaho, Mont. Nev. S. Dak. # Kans. ✓	5	9
			S.C. # N. Mex.	Wyoming	5	7
					0	0
0	1	1	3	3	22/50	
1	3	2	10	13		

Figure A-3

CHARACTERISTICS OF SITES SELECTED

Characteristics State	Fiscal Capacity	Production (MD's/RN's) 1972-73	Supply (MD's/RN's) 1972-73	Education Governance	Statistics	Region
Minnesota	HR	++	++	CC	CHSS (76)	V
Missouri	LR	++	--	CC	CHSS (76)	VII
Ohio	LR	++	-+	CC	No	V
Georgia	LF	++	--	GB	No	IV
Hawaii	HF	--	++	GB	No	IX
Mississippi	HR	-+	--	GB	CHSS (75)	IV
Nebraska	LR	+-	-+	CC	CHSS (76)	VII
Maryland	HR	++	+-	CC	No	III
Illinois (m)	HR	++	-+	CC	No	V
N. Carolina	LF	++	--	GB	CHSS (76)	IV
Florida (m)	LF	++	--	GB	CHSS (74)	IV
Arizona	HR	--	-+	GB	CHSS (74)	IX
Maine (m)	HR	--	-+	GB	CHSS (77)	I
Arkansas	LF	--	--	CC	CHSS (74)	VI
Oklahoma (m)	LF	--	--	CC	No	VI
New Jersey	HR	-+	++	CC	No	II
Connecticut (m)	HR	-+	++	CC	No	I

	HF	HR	LF	LR	++	+-	-+	--	++	+-	-+	--	CC	GB	(N)	CHSS	No
Distribution in Sample (11 States)	1	4	3	3	6	1	1	3	2	1	3	5	6	5		7	4
Distribution of Linkage States (22 States)	2	8	7	5	13	1	2	6	4	1	7	10	13	9		14	8
Distribution in U.S. (50 States)	7	17	19	7	20	2	5	23	12	2	15	21	29	19	2	26	24

Legend

HR =	High and Rising	(m) =	Matched State
HF =	High and Falling	(N) =	Neither GB nor CC
LR =	Low and Rising	++ =	Above median MD & RN
LF =	Low and Falling	+- =	Above median MD, Below median RN
CC =	Coordinating Council	-+ =	Below median MD, Above median RN
GB =	Governing Board	-- =	Below median MD & RN
CHSS =	Cooperative Health Statistics System Manpower Component		

careful preparation to insure that time was used well and appropriate respondents were contacted. Procedures that were used to gain entry into states and to prepare for site visits are outlined below, followed by a specification of respondent identification criteria and discussion guides for Phase One.

The introduction to each site visit was made through the Federal Linkage Project Officers in the Regional Offices. Entry into each state was via a liaison representative suggested by the Linkage Project Officer, usually the project staff for the linkage contract. The liaison representative helped identify data sources and respondents for all study variables. Extensive pre-site visit telephone contact with him/her and with other sources named by him/her enabled us to establish a schedule for interviews. Also, the liaison representative was asked to locate and provide us with significant documents and other data, so that we were fully prepared when we arrived on site.

Respondent Identification. Respondents for interviews in Phase One were selected to represent wide areas of the health manpower decision system based on their access to information concerning their segment of the system and their perspective on the whole system. Segments to be represented were selected on the basis of two criteria -- the position in the decision system, and the amount of influence on planning and decision-making.

First, the position in the system describes the level of decision-making in terms of the type of decisions of concern in the segment, and the role taken in the decision process. Thus, policy decision-makers and staff to policy-makers are concerned with broad planning and resource allocation decisions. Administrators at state and local levels, concerned with planning for the management of public policy, make specific allocation decisions. Within the health professions, a broad outlook toward resource allocation and program development is taken by professional associations and provider associations who advocate positions of their constituencies. In addition, constraints are imposed on decisions by licensing agencies and outside accrediting groups who make quality assurance decisions to set professional standards. Direct service professionals in the health and education sectors of the state economy are principally concerned with development and implementation of programs for education and patient care.

The second criterion for the selection of segments represented was the amount of influence in the segment on important system decisions. Segments with greater impact on planning and decisions were approached more frequently for interviews. In pre-site preparation and during initial interviews on site, information was obtained from the liaison representative and other knowledgeable sources to identify the influence of significant actors in the system. Some flexibility was maintained in the site visit schedule to attempt to reach all important segments of the decision system.

Discussion Guide. The discussion guide for Phase One was a set of questions designed to investigate the impact of the linkage projects on the health manpower decision system. Eight topic areas included:

- General State Context
- Decision System Boundary
- Specific Decision Context
- State Linkage Strategy
- Decision System Inputs
- Decision System Process
- Decision System Products
- Decision System Effectiveness.

The questions in each topic area were used generally to guide conversations with each respondent. Based on the knowledge of the respondent, specific lines of inquiry were altered accordingly. A list of the discussion guide questions is included in Attachment A which follows.

A.2.2 Phase Two Site Visit Methods

Building on the information and experience of Phase One, Phase Two field methods were refined by specifying more precisely the respondents to be interviewed and the questions to be asked of each.

Respondents to interviews were identified in preliminary contacts with the liaison representatives for each state. Although a procedure similar to that of Phase One was used to gain entry and to identify information to select respondents, greater specification was possible in Phase Two. Attachment B -- Site Visit Planning -- is a sample of material sent to each state. As shown, representatives from organizations at different levels in the decision system and in different major sectors (health service, education, manpower service, policy/finance) were contacted.

Discussion Guides. Based on the refined evaluation framework presented in Chapter 2, a general discussion guide and specific discussion guides for each respondent were developed. Sample discussion guides are included below in Attachment C.

A.3 Site Reports

Following each site visit, a report was assembled to synthesize the information from documents and interviews at each site. The report topics were keyed to the framework for analysis. An outline of the site report for Phase Two appears as Attachment D.

Phase I

DISCUSSION GUIDE

Respondent Information:

Name ____________________

Title and Position ____________________

Representing (which organization) ____________________

Number of years in current position ____________________

(If less than 5 years in current position) past position ____________________

Education Background ____________________

Who reports to ____________________

Responsibility in current position ____________________

Interview Topic # 1: General State Context

Economic Characteristics:

1. What are the major economic problems faced by the state? What are the State Government's economic priorities?
   - High employment.
   - Labor shortage, need for skilled labor.
   - Maintenance or improvement of environment quality.
   - Attraction of new industry and capital.
   - Revitalization or maintenance of industrial base.

Demographic Trends:

2. How have population characteristics in the state developed over the past 10 years?
   - Stable population.
   - Aging population.
   - Declining population.
   - Large immigration (foreign immigrants, professional and skilled workers, rural or urban poor).
3. In which parts of the state have the most significant changes taken place?
   - Rural growth or decline.
   - Urban growth or decline.

Political Characteristics:

4. In general what is the relative strength of different branches of government (legislative, executive, bureaucracy, courts)? Where do policy initiatives begin? What veto power does each branch exercise? What constraints or initiatives does each branch exercise?
5. Where are the major influential interest groups outside the state government? To what degree (great...moderate...little) does each participate in state policy making? How do they make input to state policy?
   - Industry groups (which industry)
   - Agricultural groups
   - Consumer groups
   - Ethnic groups
   - Unions

Health Resources Environment

6. What is the regulatory environment in the state? What types of regulatory activities does the state engage in? What is the philosophy in the state with respect to regulation of private enterpris
    - Certificate-of-Need
    - 1122 review
    - rate review
7. Of all the factors that go into the health delivery system, which are the most notable What are the principal health resources in the State in each of the following categories?
    - Health care activities (Public and Private)
    - Training Institutions (Public and Private)
    - Research Centers
    - Skilled Manpower
8. What are the major health resources problems in the state?
    - Capital (facilities and equipment) shortage or surplus.
    - Labor shortage or surplus.
    - Geographic distribution of resources.
    - Specialty distribution of manpower.
9. What are the migration patterns for health manpower? Is the state an importer or an exporter of Physicians, Dentists, Nurses, etc?
10. What are the goals of major interest groups with respect to health manpower? What are the goals of health providers, health educators, state government leadership?

History of Health Planning

11. What has been the state's experience (pre 1973) in health planning activities? (in CHP, RMP, and other programs).
    - The degree of data development in the past.
    - The level of staff expertise.
    - Connection to political decision-making structure.

Interview Topic # 2: Decision System Boundary

1. This study is concerned with training of manpower for health delivery. What types of occupations and professional specialities are trained in your state to provide health care? What types are utilized in health delivery which must be imported from outside your state?

   - Physicians
   - Osteopaths
   - Dentists
   - Veterinarians
   - Optometrists
   - Podiatrists
   - Pharmacists
   - Nurses
   - Physicians Assistants
   - Dental Assistants
   - Operating Room Technicians
   - Lab Technicians
   - Social Workers
   - Public Health Workers
   - Hospital Administrators
   - Nursing Home Administrators

2. In order to take an administrative point of view, the study is concerned with decisions that affect the production of health manpower. What are the most important decisions made entirely by your organization which impact on health manpower education (number of students, type of training, etc)?

   Which decisions affecting health manpower education are made partially by your organization? For each which other organizations are involved?

   (Prompting if necessary, using the following definitions:

   Resource allocation decisions - decisions about inputs to programs,
   Program development decisions - decisions about the design and orientation of education activity,
   Quality assurance decisions - decisions about standards of operation of programs and achievement of program graduates,
   Planning decisions - decisions to establish goals, objectives and measure progress toward objectives.)

3. For the decisions and organizations or groups mentioned (in question 2), who is the most appropriate spokesman? Of the groups mentioned which are the most critical to policy and decision-making for health manpower?

   Groups:

   - Education Actors
     - State University System
     - Board of Higher Education
     - Community, State, and Vocational Colleges
     - Educational Associations
   - Health Education Actors
     - Health Science Center
     - Area Health Education System
     - Teaching Affiliates
   - Health Actors
     - Health Departments
     - Health Planning Agencies (HSA's; SHPDA's)
     - Professional Associations
     - Provider groups
     - Rate Regulation Commission
     - Third Party Payors
     - Voluntary Associations
     - Accreditation and licensing groups
   - Government Actors
     - Governor's Office
     - Budget Bureau
     - Legislative Committees
     - Labor Department
     - State Merit System

Interview Topic # 3: Specific Decision Context

Influence Structure

1. We have identified a list (from documents and interviews) of organizations and groups that have major involvement in decision-making for health manpower.

   a. Are there any groups or organizations which should be added or substracted from the list? Why?

   b. For each group on the list we would like your estimation of the influence of that group typically for decisions concerning health manpower. Use the scale--little influence....moderate influence ...great influence.

2. What are the levels and steps for consideration and approval of proposals for resource allocation and program development for health manpower?

3. What proportion of health education is controlled by publicly owned or operated institutions. What proportion of private health education is supported from public funds?

4. To what extent and how do professional groups and service providers influence decisions concerning health manpower production?

   - Indirectly through utilization.
   - Direct action.

5. Are there nationally recognized health leaders who impact decisions? To what extent?

Focus on Health Manpower Planning in Government

6. Within the government (state, federal, and government sponsored agencies such as HSA's) there are a number of agencies charged with administration of health care and health education activities. For each of these what is the emphasis on planning and program development for health manpower (versus facilities and other planning or direct service)? What are the priorities of the agency with respect to service versus planning and facilities versus manpower?

(Agencies:

Health Resources Planning

HSA's

SHPDA and SHCC

Health Data

- CHSS manpower component.
- CHSS other components.

(Health) Education

- Department/Council on Higher Education
- State University Governing Body (e.g., regents)
- State University Health Science Center

Health

- Department of Health
- State Hospitals

Finance

- State budget department

Legislature

- Finance and Health Education Program Committee

State Licensure Boards)

7. What type of health manpower planning or program development does each agency engage in? Which Planning activities do other (local, private) important state actors participate in or do independently?
   - Special Studies for specific problems areas.
   - Feasibility studies for particular programs.
   - Data Gathering.
   - Setting goals and objectives.
   - Coordination of decision-makers (between the public and private sector or between the education and health sector).
   - Developing planning models and systems.
   - Developing training programs.
   - Developing service programs.

Interstate Coordination of Health Manpower

8. What sorts of interstate planning activities are attempted? By whom?
   - Communication and information sharing.
   - Coordination of goals and objectives.
   - Joint plan development and implementation.
     a. What is the influence of interstate HSA's on the process of planning?
     b. Are there multi-state planning organizations and coordination mechanisms?

Interview Topic # 4: State Linkage Strategy

History Behind Linkage System Development Efforts

1. How was the decision made to initiate the linkage development effort?
    - a. What factors led to initiation of linkage development effort? What was the importance of federal funding and interest?
    - b. What state activities preceded the linkage project? How much state support was there for the linkage development effort?
    - c. Who initiated the effort? For what reasons?
    - d. Where was support and opposition?
    - e. What communication, analysis, or conflict resolution (compromise) occurred during the process?
    - f. How was the linkage contract location identified?

Linkage Organization and Thrust

2. How is the linkage project situated organizationally in the state?
    - a. Inside or outside state government?
    - b. In health or in education sector?
    - c. In policy position (agency head or governor's office) or at administrative level of bureaucracy?
3. How much effort is allocated to the linkage project?
    - a. Funding from federal, state, and other sources.
    - b. Staffing - number, background and responsibility of each.
    - c. Consultants - number, background and responsibility.
4. What is the scope of linkage project efforts?
    - a. What types of decisions are addressed by the linkage project (resource allocation, program, planning, quality assurance)?
    - b. Which organizations and groups are included in the linkage system?
    - c. What level and kind of professionals are considered by linkage staff and advisory group?
5. What is the orientation of the linkage project toward facilitation of decision-making? How much emphasis is placed on the following activities, that is, how much funding and staff with appropriate background and organizational responsibility are allocated to conduct the following support activities?
    - a. Provision of data for decision-making or monitoring results of decisions?
    - b. Analysis of outcomes of alternative decisions or plans?
    - c. Enhancement of interagency communication and coordination in process of decision-making?

Process of Linkage System

6. What mechanisms have been used most extensively to enhance communication and coordination among health manpower decision-making actors?
    - a. Formal mechanisms
        - Joint contracts
        - Subcontracts
        - Interagency agreements
        - Committee structure, such as Advisory Group
        - Task Forces
        - Newsletters, reports and other formal communications
    - b. Informal mechanisms
        - Direct consultation
        - Joint decision-making activity

7. What level of decision-making is the major focus for interaction of the linkage system?
    - a. What proportion of interaction of linkage project actors involves policy level decision-makers from major public agencies, legislative committees or private organizations?
    - b. What proportion of the interaction of linkage project actors involves staff of state agencies, legislative committees or private organizations?

8. To what extent are communication and coordination linkages institutionalized (continuous and recognized organizational activity)?

9. Was an advisory group formed to guide the linkage project?
    - a. What was the mission of the advisory group? How well was it specified?
    - b. Did the advisory group have a direct role in decision-making or coordination of decision-making?
    - c. Did the group represent all major influence groups in the state? Did it represent those groups who supply and employ manpower?
    - d. How often did the group meet? Were meetings well attended? What important items were on the meeting agenda? Were members committed to results of the project?

10. How has the linkage system developed over time?
    - a. What were priorities for system development?
    - b. What steps were taken to enlist cooperation of state and private agencies? What sequence of steps was used?
    - c. What problems were encountered and how were they resolved?

Interview Topic # 5: Decision System Inputs

Funding

1. What are the major sources of funds for development of health manpower training activities in the state?
    - Federal Agencies (BHM, NIH, other Health Agencies, Education Agencies).
    - Patient Care (third party insurance and government programs).
    - State Appropriations (for Higher Education).
    - Student Fees (tuition and scholarship programs).
    - Private sources (foundations, voluntary associations).

    How has the pattern of funding changed over the past 5 years?

2. To what extent is there coordination among federal, state and private funding sources to promote consistent objectives with respect to health manpower?
    a. Has the amount of coordination among funding agencies changed (increased, decreased, or remained the same) during the past 5 years?
    b. To what factors would you attribute the pattern of coordination of funding? Has the existence of a health manpower plan facilitated coordination? Has the health data system contributed to coordination? Has the linkage project contributed?

Data

3. What are the major sources of health data on health manpower supply and demand in the state?
    - CHSS Manpower Component
    - Licensure Data
    - Professional Associations (supply)
    - Provider Associations (demand)

4. Is health manpower data centrally administered? By whom? IF NOT, what coordination mechanisms are used? How are independent sources of information integrated? (Type of system-automated, hand) Has the amount of coordination of information changed in the past 5 years? To what factors would you attribute any changes in coordination of data processing activity?

5. Is the data available for health manpower adequate for decision-making needs?
    a. Are there significant gaps in types of information or professions covered?

b. Is the data accurate and unbiased? Has the confidentiality of professionals been maintained in data gathering efforts?

Analysis

6. What type of analytical techniques are available to decision-makers for health manpower?
   - "Rules of thumb"
   - Tabulation of Data
   - Simulation or optimization models
   - Automated decision support systems

7. Is analysis of manpower problems and alternative solutions to problems carried out by a single service agency (e.g., SHPDA) or are independent analyses of problems offered? Which agencies offer independent analysis in resource allocation and in program development decisions?
   - State agencies
   - Provider or Professional Associations
   - HSA's or other local interests

8. Is analysis of the health manpower status in the state adequate to address the problems encountered by planners and decision-makers?
   a. Are comprehensive approaches to manpower development proposed? Or are narrowly focused problems addressed?
   b. Is the validity of analysis established in studies and plans?
   c. Has a thorough literature search been obtained to incorporate state-of-the-art developments into analyses?
   d. Are there important gaps in analysis and understanding of health manpower problems and solutions? Can gaps be attributed to insufficient analysis effort or to insufficient knowledge available to solve problems?
   e. Has the quality of analysis changed in the past 5 years? To what factors would you attribute changes?

Staff

9. Which state agencies have staff available to provide the necessary inputs to health manpower planning and decision-making? How many? What is their background and analytical orientation (e.g., political analysis, econometric analysis, financial analysis)?
   - Linkage project
   - Other state Education or Health Agency
   - Legislative committee
   - State university system
   - Regulatory agencies (e.g., licensing, rate regulation, CON)

10. Is there coordination of work among the different staff agencies?
    a. Do different agencies do different types of analysis or are analyses competitive? Is there an attempt to focus efforts of different agencies on similar problems in a complementary way?
    b. Has the coordination of staff effort changed in the past 5 years? To what factors would you attribute changes?

11. What impact does the state merit system have on recruitment of skilled staff to state agencies to support decision-making?

12. Are consultants used to provide analytical inputs to decisions? Which organizations and agencies most often contract consultants? Is there coordination of efforts to contract consultants? Are they contracted on a competitive or sole source basis?

Independent Inputs

13. Other than the linkage project, which public agencies and private organizations in the state devote staff effort to independent future planning for health manpower? FOR EACH:
    a. What funding does the agency have to support this activity? What is the source of funds (federal, state, private)?
    b. How many staff? How many consultants?
    c. What is the educational background and qualifications of the staff and consultants?
    d. What is the source of data for plans? What kinds of data are used?
    e. What kind of analytical tools are available to the staff (such as simulation models, optimization techniques, or computer processing)?
    f. What types of analysis is attempted?
    g. How has the situation for the agency changed in the past 5 years?

Interview Topic # 6: Decision System Process

1. To what extent (great...moderate...little) is there agreement among orginizations on the roles and missions of each with respect to health manpower decisions?

   a. Name organizations and agencies which have conflicting roles or mission. How frequently do conflicts arise? What issues (type decisions, type manpower) are likely to produce conflicts?

   b. Name organizations and agencies which have complementary goals and missions. How frequently do these agencies collaborate on decision-making? On what issues do they have a pre-established consensus on objectives?

2. For which issues (decision type, manpower type, level of decision) are there pre-established steps and procedures for decision-making? What proportion of issues encounted have specified procedures? Do different issues follow different procedures? What criteria are used to specify procedures?

3. What mechanisms are used to resolve conflict among decision-makers? How frequently and how successfully are they used? (Mediation, bargaining, majority vote, litigation).

4. To what extent are decisions coordinated among actors in the system?

   a. Which decisions are coordinated through one-way communication such as memos, newsletters, or data transfer?

   b. Which decisions are coordinated through two-way communication among actors (formal and informal meetings, and consultations)?

   c. Which decisions are coordinated by veto power of collaborating agencies?

   d. Which decisions are coordinated through consensual joint decision-making?

e. How has the coordination of decision-making changed in 5 years?

5. How is the process of different decisions managed?

   a. For which issues is there a specified group or individual responsible for assuring that proper inputs and decision-makers are included in the process and that choices are made and implemented?

   b. How frequently are decisions made by actors independent of inputs of other relevant actors?

Decision Process. We have identified several areas for more in depth understanding of the decision process. For each issue please give the following information to describe the decision process.

5. What actors were involved in the decision and what role did each play in the process? Were all important actors included?
6. What mechanisms for communication did actors use most often (Committees, informal contact, memos, newsletters)?
7. What kinds of information and analysis were used in decision-making?
8. What conflicts occurred and how were they resolved?

Interview Topic # 7: Decision System Products

1. Products of the decision system include those items necessary to the development of the ability of the system to make decisions as well as the ultimate plans and choices made. What are the most significant interim (e.g., development of a data system) and ultimate products (e.g., the decision to build a medical school) of the health manpower system?

2. For the following possible products please describe if and when they were produced, how often, by whom, and for what purpose?

   - Literature search of health manpower planning techniques.
   - Identification of sources of health manpower data.
   - Development of Health Manpower data system.
   - Development of analytical models or integrated decision support systems.
   - Publication of newsletter, reports, or option paper for communication.
   - Conduct of feasibility studies.
   - Conduct of analyses of specific manpower problems.
   - Conduct of workshops and/or seminars on specific problems or topics in health manpower planning and development.
   - Development of formal affiliation agreements among agencies concerned with health manpower.
   - Formulation of plans for future funding of health manpower planning.

Interview Topic # 8: Decision System Effectiveness

1. For important decisions and interim products of the decision-making process, how thorough was the consideration of the issue?
    - a. Were all major actors represented in the deliberations?
    - b. Were alternative approaches considered? Were innovative models of health delivery examined?
    - c. Were products timely for needs of action?

2. Are interim products useful to decision-makers in the system?
    - a. Does the literature search help develop state-of-the-art techniques?
    - b. Do data systems provide accurate, reliable, timely information?
    - c. Do inventories of agencies involved help facilitate coordination?
    - d. Do analyses help crystalize problems and choices? Are analyses understood and believed?
    - e. Do committees enhance interaction and coordination of decisions?
    - f. Do interagency agreements bind organizations around common purposes?
    - g. Do health plans help guide decisions?

3. Are decisions and plans agreed to and supported by decision-makers?
   Are decisions and plans adhered to and implemented by all decision-makers?

30[illegible]

4. Are plans known by and adhered to by outside agencies such as agencies of the Federal Government who provide inputs to the system?

5. Has there been a change in the effectiveness of the decision system in the past 5 years? To what factors would you attribute the change?

    a. Is there more connection between the suppliers and users of health manpower?

    b. Are decisions more comprehensive?

    c. Is there more agreement on decisions and commitment to implementation?

    d. Is there better connection between policy-making and policy analysis?

Phase II

SITE VISIT PLANNING

To ascertain the impact of linkage systems, we would like to interview respondents who are representative of different sectors of the health manpower decision system in the state. We would like to meet people from private, as well as public agencies and from different professional groups. Broadly, we will focus on four program sectors: 1) health occupations education, 2) health service delivery, 3) health occupations certification and employment, and 4) budget and finance. Three levels of decision-making are policy, administration/planning, and service. Although we will address issues related to all kinds of manpower, for purposes of respondent selection, we would specifically like to speak to representatives of the medical and nursing profession. In general, we would like to speak with members who are staff to boards and committees, rather than board members themselves (the exception is the linkage advisory group where we want to speak to both members and staff). This is because staff have a view of the everyday activities, as well as, the meetings and politics. There may be instances where more than one person from the organization interviewed will be necessary to give the breadth of information we desire. Group meetings are possible with the limitation that more than three or four persons will be difficult to manage and may not be a good use of the respondent's time. Sometimes, an individual will have several roles and can be representative of more than one actor. In these cases, ample time should be allowed to interview the person separately for each role. When there are such double interviews, the second and subsequent interviews will require 1/4 to 1/2 hours less than the time suggested because introductory time will be saved.

With the broad guidelines in mind, below is a list of specific agency representatives to be selected and the interview time desired for each.

Education Actors:

(1½ hr.) 1. A representative from a Commission or Department of Higher Education or from the State University System or Board of Regents. Someone with specific knowledge of health manpower planning and programs and the connections to manpower decision areas.

(1 hour) 2. A representative from the Department of Community or Vocational Education. Someone with specific knowledge of health manpower planning and programs and the connections to other decision areas.

(1 hour) 3. A representative from a Health Science Center or a Medical School. Someone in an administrative position with a broad perspective on programs. Individuals knowledgeable about specific special programs may be invited to sit in (e.g., an AHEC program or other statewide manpower program). The selection of a public or private school should be made in conjunction with #4 below.

(1 hour) 4. A representative from a Community College (with programs in allied health or nursing) or from a School of Allied Health in a university. Someone in an administrative position with a broad perspective of programs and the connection of programs to planning and decision-making. If #3 above is from a public school, this school should be private and vice versa.

Health Actors:

(1-1½ hr.) 1. At least one representative from a Health Systems Agency. The executive director or an alternative who has a broad perspective on how health manpower planning fits into agency efforts and how it relates to decision-making. If we can meet with representatives from more than one agency simultaneously, it will give us more information. We would like to meet with agencies in rural or urban areas with manpower problems.

(1-1½ hr.) 2. One or more representatives from State Health Planning (SHPDA), if it is different from the linkage project. Someone who has a broad perspective and is familiar with health manpower efforts in the state.

(3/4 hour) 3. A representative from the Health Statistics agency of state government. Someone with knowledge of manpower statistics and how it fits within overall statistics efforts and health planning and decision-making.

(3/4 hour) 4. A representative from an Executive Office concerned with broad areas of health programs. A representative from the Health Department or from an umbrella agency (Department of Human Resources) with a perspective on how health agencies fit together and how linkage fits in will be informative. If both health statistics and health planning are in the health department, then another health related department such as the Department of Mental Health or the Department of Social Services should be substituted to help round out our information from State government health actors.

(1 hour) 5. A representative from health service delivery providers. Someone with a broad perspective on how users of manpower are connected to planning and development decision-making. Knowledgeable staff of the Hospital Association will probably be the most important source of information, but in special cases other association representatives will be appropriate substitutes (e.g., Nursing Home Association, HMO representatives, neighborhood health center representatives).

Manpower Actors (Occupational Certification and Employment):

(½ hour) 1. If there is an agency which houses professional licensing boards and plays a significant role in administering the coordinating registration activities, then we would like to interview an administrative representative of such a Department of Consumer Protection or Regulation.

This person will provide an overview of professional regulatory activities. This interview can be combined with the licensing board interview below:

(½-1 hr.) 2. A representative from a Licensing Board. Regardless of the amount of coordination between boards, we would like to speak to a staff member (executive secretary) from either one of the Nursing or the Medical Examiner's Board. Selection of one will depend on the type and amount of health manpower decisions that the Board and its corresponding professional association are involved in. A board that does program approval, planning, or other manpower decision activities in addition to registration will be more desirable to interview.

(½-1 hr.) 3. A representative from a professional association. This selection will be made concurrently with the selection of the licensing board. If one of the Nursing or Medical boards is selected, the other association should be selected. Again, the type and amount of manpower activity which the association is engaged in should enter into the selection.

Finance and Policy Actors

(1 hour) 1. A representative from the staff of the Legislative Committee most influential in health manpower issues. One of the Education Committee, the Health Committee or the Fiscal Committee, will probably be most appropriate.

(½-1 hour) 2. A representative from the State Budget Office or from the staff of the Governor will give us information concerning state policy and resource allocation from the executive point of view.

B

Linkage Project

In addition to the agency interviews specified above, we will require time with linkage project staff and advisory group members to provide us an introduction and overview, and to talk about specific linkage project interactions. The time with the linkage staff and director should be during the first half day of our visit and will take about 3 hours in addition to the time required for the home agency specified above. Interview time for the advisory group can be obtained in two ways. A group meeting with key advisory group members can be scheduled for 1 to 1½ hours. Alternatively, many of the agency representatives will also be on the advisory committee. If so, an additional ½ hour for each of the key members during their individual interviews will allow us to ascertain information on advisory group functioning. In selecting advisory group members to be interviewed, we would like to be sure to contact one or two advisory group members from the private sector (outside state government) of health, education, or manpower employment.

Other State Actors - Each state's situation is unique. There will probably be sufficient time to schedule representatives from other agencies that have had significant impact on the linkage project or state health manpower decisions. These agencies might include the Department of Labor and Division of Employment Security, or Medicaid, Blue Cross/Blue Shield or other third party payors.

Schedule

Incorporating the preceding information on agency representatives, a model site visit schedule is attached for the three day site visit. In the schedule, it is assumed that some of the state agencies will be interviewed on Day One as the home agency of the linkage project. This will allow more time in Day Two. With the exception of meeting linkage project staff first, the schedule is flexible to meet the schedules of those interviewed. To the degree feasible, this flexibility should be retained so that adjustments can be made to incorporate unplanned interviews while on site.

When scheduling interviews, it is important to allow for ample travel time between interviews. To the extent that it is possible to have all interviews in one room or one area, the problem of travel is minimized. We would appreciate very much if interviews can be arranged to minimize travel time.

B

Model Site Visit Schedule

Day 1	Linkage Project	
AM	Linkage Project Director (Liaison Representative)	3 Hours
PM	Linkage Staff (group meeting)	1 Hour
	Linkage Advisory Group Members (group meeting)	1 Hour
	Linkage home agency representatives	
Day 2	State Agencies (not covered in Day 1)	
AM	Higher Education Agency	1½ Hour
	Vocational Education Agency	1 Hour
	Consumer Protection Agency	½ Hour
	Licensing Board	1 Hour
PM	Executive Office for Human Resources	3/4 Hour
	State Health Planning	1½ Hour
	State Health Statistics	1 Hour
	State Legislature	1 Hour
	Budget Office	1-½ Hour
Day 3	Outside State Government	
AM	Professional Association	1 Hour
	Provider Association	1 Hour
	HSA(s)	1½ Hour
PM	Community College	1 Hour
	Health Science Center	1 Hour
(optional)	Third Party Payor, Labor Dept., or other agency	½-1 Hour

Attachment C

PHASE II DISCUSSION GUIDES

General Interview Format

I. Introduction: Summarize purpose and approach of the study, what types of information are sought, and how information will be used. This is necessary even if the respondent has read the summary.

II. Person Interviewed - These questions are necessary to find out the kind of information and the perspective which the respondent may have. Interviewees with more than one role will have to be questioned separately for each. Begin with the role of greatest interest, and then go to other role(s).

1. Position in Agency - who reports to.
2. How long in job? Background and experience, especially planning experience.

III. Agency Description - These questions begin to broaden the base of information on the interviewee's world and, in turn, give us information on the structure and function of the agency or committee he/she represents. Also, we would like to get information on closely related agencies that we will not be interviewing (e.g., for a Licensing Board, how do other boards differ).

1. Function and legal reponsibility of the agency and position in government with respect to other key agencies (e.g., Education, SHPDA, Health Data)
2. Internal organization structure of agency - major program thrusts of agency.
3. Resources - special staff skills; # of staff; budget, data sources, special technology available (e.g., computer models)
4. Membership (for committees and boards): How are members selected? To what extent are member representatives of home agency vs. members with functional skill to contribute to the group.
5. Significant factors in history of development of agency.

C

IV. State Context - State context questions will identify major manpower issues in the state and other relevant background information. These questions are most usefully asked when speaking to someone who appears to have a broad perspective and when there is ample interview time.

1. What are major demographic, political, and regional geographic factors which impact Health Manpower planning? What are major health problems in the State. Where does health care rate in the State's overall priorities?

2. What are most significant health manpower problems? What are priorities for action on health manpower? How are the priorities established?

V. Linkages: In these questions we find out how the home agency of the interviewee and closely related agencies fit into the structure of health manpower planning and decision-making; here we find out the mechanisms for coordination and linkage. Questions should be asked about current status and change in the past 5 years.

1. What is the role of the agency in manpower planning and decision making?

2. What mechanisms are used to relate to organizations in other sectors (Health, Edcuation, Manpower, Budget and Finance?) How have mechanisms developed over time?
    - What mechanisms are used to coordinate data?
    - What mechanisms are used to coordinate analysis and interpretation of data?
    - What mechanisms are used to coordinate goals and priorities?
    - What mechanisms are used to coordinate plans and planning?
    - What mechanisms are used to coordinate implementation of decisions?
    - What mechanisms are used to coordinate evaluation and control of decisions?

VI. Issues and Processes - As an example of how decisions about health manpower are made, these questions go into depth about recent cases of decision-making in our 4 broad areas: (issues should be selected to represent current processes and those prior to linkages):

1. Resource allocation: a) State budget appropriation, b) Grantsmanship for outside (federal and foundation) funding, c) private and local appropriation.

2. Manpower Program Development (more than merely education): a) Doctoral Degree level, b) Master and Bacculaureate level, c) Assocaite and Secondary level.

3. Are mechanisms ad hoc, formal, pre-established, written, continuous, routine? How long have they been in existence, will they remain? Where do mechanisms receive fiscal support?

4. What level are interactions? Is the aim information sharing? Is it negotiation among agencies, or is it joint decision-making? How frequent are interactions? Are they face-to-face meetings? Extent of compliance with decisions.

5. Manpower Utilization Decisions: (by delivery setting) a) Long-term Care (e.g., Nursing Home), b) Acute Care (e.g., hospital), c) Ambulatory Care (e.g., health clinic, HMO, d) Community Outreach.

Questions:

1. Who initiated process? Who manages process of decisions? Are steps specified and routinized?

2. What actors are involved? What is the role and function of each (advocate, provide information or analysis, mediate between other actors, approve and ratify decisions)?

3. What communication mechanisms were used?

4. How much and which information, staff, and other resources were coordinated and shared among actors? Was there an accurate perception of the needs of other actors?

5. What information and analysis was used in the decision-making (for identifying problems, alternative solutions, evaluating choices?) Who produced the analysis? Was it considered to be neutral or special interest advocacy?

6. What conflicts arose? How many? How were they resolved? How satisfactorily?

7. What choices were made? What were the major decision criteria for choice?

8. Did choices follow pre-established goals, objectives, priorities or plans? How were choices put into action, and later controlled and evaluated?

VII. Products: During the site visit and prior to the site visit, we must develop a list of specific products produced by the linkage project and other key health manpower planning documents. Products include: 1) reports, newsletters, studies and analysis, 2) systems procedures and other information processing mechanisms (linkages, 3) agreements, statements of goals, affiliations and other formal or informal bonds; 4) workshops, seminars and other developmental mechanisms. For each product the following information should be obtained; only information unobtainable from other sources should be obtained from interviews:

1. Title, data, who produced it.
2. Purpose and methods generally (a few sentences).
3. Outcome and utility (primarily from interviews), validity, reliability, comprehensiveness, timeliness, acceptability, consistency.

VIII. Impacts: This is a concluding section to cover more directly some of the issues relating to: a) coordination of decision-making and integration of the network, b) other technical planning development considerations, c) the impact of linkage along with concurrent developments on decision-making for health manpower. The users of the data, analysis, linkages, etc., should be asked questions relevant to their position in the system. The questions are meant as a checklist to conclude the interview and should not be overly redundant with the rest of the interview.

A. Coordination and Integration of Decision-making

1. Where are priorities set for health manpower decisions. Is there concensus on key issues?

How is consensus developed - through informal individual links, through central forum or through several centers?

2. How is the process for decision-making choices coordinated? Is there a central forum for establishing task forces around issues or are ad hoc coalitions established informally? How do procedures differ for different issues (e.g., more political issues such as new school vs less political issues)?

3. Where is the analysis of needs and futures carried out? By ad hoc groups, by subgroups of a larger group, by multiple advocates? Is the veracity of analysis and conclusions criticized based on political considerations vs technical considerations? Is there a commitment to "by into" imperfect projections and assessments and attempt to improve upon them or are there attempts to discredit results?

4. Where are data coordinated? Is the system central and cooperative, fragmented, compatible over time and across categories?

5. Where and how are comprehensive plans for education, service, credentialling, etc., for health manpower coordinated? Does a single agency or institution take the lead, or is there a coordinating committee?

6. How is intitiation of action coordinated? Are relevant groups informed about actions of others the have large impacts on their activities? Are the energies applied by different groups compatible?

7. How is continuing assessment and evaluation of plans coordinated? Are similar criteria used by different people and over time? Are evaluations gainfully incorporated into the on-going process?

B. Planning and Development - for each planning development element answer the following questions concerning technical achievement.

Elements:

1. Inventories, training and manpower (current status)
2. Data System to monitor progress
3. Method and procedure to determine needs and problems

4. Method and procedure to project future supply and demand.
5. Method and procedure to identify alternative solutions to problems.
6. Method and procedure to determine goals and priorities.
7. Plans for education, manpower utilization, health service.
8. Method and procedure to link and integrate components of planning and decision system.
9. Method and procedure to implement plans.
10. Method and procedure to evaluate and update plans.

Questions:

1. What specific products, not already addressed, have been developed? When?
2. Are methods considered to be valid and acceptable? Accurate and reliable?
3. Have appropriate actors (type and level) been incorporated into the process?
4. Are outcomes comprehensive and on-going?
5. Are outputs useful? How?

C. Impact on Decisions - For the different relevant decision issues covered in the interview, we would like to obtain an assessment of the impact of planning on the decision-making, and to the extent possible, distinguish between impacts from linkages, PL 93-641, CHSS, Nurse Training, 1202 Planning Boards, other internal state initiatives, etc.

Decision Issues/Level of Training	M.D,DDS	Nurse	Associated
Resource Allocation			
Program Development			
Quality Assurance			
Manpower Utilization			

C

The extent of planning input for different level and type of decision:

1. None
2. Data provided
3. Short-term "quick and dirty" studies
4. Long-term studies and advisory commissions
5. Use of established planning priorities
6. Use of standardized formulas, criteria and standards
7. Use of comprehensive plans

C

Individual Discussion Guides

For individual interview guides, specific questions listed on the following pages are probing questions to be asked beyond the basic set of general questions in the interview guides. Since questions on site have to be formulated based on the particular state situation, a specific question may or may not be relevant. The questions should be used as guidelines to help ascertain information on the key evaluation variables: Linkage network development (outline Topics V, VII, and VIII), Decision Task Development (Topics III, VI, VII, and VIII), Context (Topic IV), and Linkage Strategy (Topics III, V).

Outline of Interview

I. Introduction
II. Person Interviewed
III. Agency Description
IV. State Context and Health Manpower Problems
V. Linkages
VI. Decision Issues and Processes
VII. Products
VIII. Impacts, Summary

Liaison - Overview of State Health Manpower Decision-Making

1. General Context
   - a. Economics
     - 1) Major industries, wealth of the population, economic problems.
     - 2) Dependence of the state on resources of the federal government (% of state budget which is federal).
   - b. Demographics
     - 1) Population characteristics - growth, age distribution, in or out-migration.
     - 2) Proportion of population urban and rural.
   - c. Politics
     - 1) Relative strength of different branches of government. Veto power exercized by each branch. Branch which takes the major initiatives.
     - 2) Major interest groups relevant to health manpower.
     - 3) Regionalism. What regional characteristics have an impact on health care issues and on political issues in general?
2. Health Resources
   - a. Health resources, notable resources in service delivery, training institutions, research centers manpower.
   - b. Health resource problems
     - 1) Overall costs
     - 2) Medicaid costs
     - 3) Fraud and abuse of government programs
     - 4) Over-bedded (too many facilities)
     - 5) Manpower shortage or maldistribution
   - c. Health resource regulation
     - 1) Strength of C/N, 1122, or rate review mechanism.

        2) Health education program approval authority

    c. History of health planning

3. State Government Structure

    Overview of organization arrangements of agencies in the health, education, licensing, and budget sector of the government.

Linkage Project

This interview covers aspects of the strategy and conduct of the linkage project. Questions can be asked of the project director, the staff, and the advisory group. Respondents will often represent other agencies as well and should be interviewed concerning their home agency as necessary.

1. Person Interviewed. Postion; reports to whom; length of service; background and planning experience.

2. Linkage Project Structure

   a. Project Location

      1) position (sector and level) of agency among health, education agencies

      2) position of project director in agency

      3) position of principle project coordinator in agency (if different from director)

      4) name and function of organizational units parallel to that of the project coordinator (these can be complementary resources)

   b. Level of Resources

      1) Financial - amount of contract, amounts of other contract resources (e.g. CHSS, SHPDA, 1202 grants), state allocation for activities closely aligned with project

      2) Staff - Number and composition of staff in terms of experience and orientation (political skills, technical skills in data and analysis techniques)

      3) Information sources

      4) Support of superiors

   c. Project Identity

      1) Location of staff. Are staff located in a physically distinct office? Are all staff in the same location?

      2) Administration. Are contract resources administered through a single source or are there subcontracts to separate agencies and organizations?

3) Leadership. Has the project director and coordinator been with the project from the start? What proportion of staff have been with the project from the start? Where have the staff (including the project director) relocated?

4) Visibility. To what extent has the project made use of logos, press releases and other devices to give the project symbolic visibility? What other evidence is there of visibility (e.g., frequent inquiries)?

3. Linkage Strategy and Process

a. Scope

1) Which health professions have been included in the efforts to link and plan for health manpower?

2) Which types of decisions have been addressed (education programs, health service organization, professional practice?)

3) What level of decision-maker has been incorporated?

4) What logic has been used to expand the areas covered in the project?

b. Approach - approximately what proportion of staff time was devoted to the following activities:

1) building and maintaining coordination (exchange and communication) among decision-makers

2) development of technical methods for needs assessment or manpower needs projections

3) Development of an accurate, reliable data base

4) Development of a comprehensive manpower plan

5) Building the credibility, legitimacy and authority of the agency to address health manpower issues

6) Development of manpower training, recruitment, and placement programs

c. Sequence - What were the steps for development of the linkage projects? What was the goal of the project? Explain the logic in the steps to to reach that goal (obtain workplan for project).

1) Has the scope of the project increased over time? Which professions, decisions, and levels were addressed initially? What was the logic of adding to the scope?

2) Has the approach widened to incorporate different functions? What was the logic of adding to the approach?

4. Linkage Outputs

a. Linkage Mechanisms - describe the linkage mechanisms (especially the Advisory Group) which have been established (or adopted) by the linkage project.

1) What is the purpose of the mechanism (communication, resource exchange, mutual influence on decisions, joint activities)?

2) Has the mechanism been formalized in a contract or written agreement?

3) From which level(s) in the partner agencies are the contact points for the linkage mechanism? How frequent are contacts?

4) Are objectives of partners compatible? Is there adequate understanding of the other's needs?

5) Is there a formal authority which binds the interactions of the agencies involved (i.e., are the decisions made in the linkage supported by a higher level authority or are interactions mandated by higher authority)?

6) Does the mechanism have continuous fiscal support? What are the sources? How have reorganizations, leadership turnover, or staff turnover impacted the mechanism?

b. Coordination of decision-making

1) Do linkage mechanisms facilitate coordination of resources? Are resources exchanged or pooled?

2) Do the mechanisms coordinate activities? Are activities independent, synchronized or joint?

3) Are mechanisms continuous in their impact on decisions?

4) How often (what %) are decisions of the group challenged or defied in later decisions?

5. Effectiveness of Decision System

a. Products. What products have been produced by the project? Which of the following existed prior to the linkage project (1974) and which exist now. Assess each one in terms of validity, reliability, utility, acceptability.

1) Inventories of manpower and training programs
2) On-going data system to monitor progress
3) Method to determine needs
4) Method to project future supply and demand
5) Method to identify alternative solutions to problems
6) Method to determine goals and priorities
7) Plans for education, health, health manpower
8) Method to integrate components of the decision system
9) Methods to implement plans
10) Method to evaluate and update plans.

b. Planning impacts on decisions

1) Describe decision issues where linkage mechanisms or decision products have impacted decisions in the following areas: program development, resource allocation, quality assurance, manpower organization and utilization.

2) Where are priorities set for health manpower decisions? Is there consensus on key issues? How is consensus developed - through informal individual links, through central forum or through several centers?

3) How is the process for decision-making choices coordinated? Is there a central forum for establishing task forces around issues or are ad hoc coalitions established informally? How do procedures differ for different issues (e.g., more political issues such as new school vs. less political issues)?

4) Where is the analysis of needs carried out? By ad hoc groups, by subgroups of a larger group, by multiple advocates? Is the veracity of analysis and conclusions criticized based on political considerations vs. technical considerations? Is there a commitment to "buy into" imperfect projections and assessments and attempt to improve upon them or are there attempts to discredit results?

5) Where are data coordinated? Is the system central and cooperative, fragmented, compatible over time and across categories?

6) Where and how are comprehensive plans for education, service, credentialling, etc., for health manpower coordinated? Does a single agency or institution take the lead, or is there a coordinating committee?

7) How is initiation of action coordinated? Are relevant groups informed about actions of others that have large impacts on their activities? Are the energies applied by different groups compatible?

8) How is continuing assessment and evaluation of plans coordinated? Are similar criteria used by different people and over time? Are evaluations gainfully incorporated into the on-going process?

State Health Planning

Will likely be the linkage contractor or at least a key agency to be linked. Its relations with health service department, statistics, and education agencies will be key to health manpower planning efforts.

1. Person Interviewed. Position in agency, who he/she reports to, how long in job, background and experience in planning and in state government.

2. Agency Description

    a. Organizational locations with respect to health department, other social services, other planning agencies, and data agencies.

    b. Internal structure of agency - major program thrusts

    c. Resources - number of staff and budget, special skills, experience with health manpower planning. Are there manpower planners in the agency?

    d. Composition of SHCC. How are members selected? Are significant interests represented? Do decisions make a significant impact on the policies of the executive and legislature in state government and on the private sector?

    e. History. Changes due to PL 93-641. Was the agency a previous "A" agency? What proportion of staff are carried over? Was the SHCC reconstituted? What proportion of the previous board remains? How has 93-641 changed the relations to local planning agencies, and other state agencies? To what extent has 93-641 changed the emphasis on manpower planning?

3. Linkages: What mechanisms are there for lateral relations between your agency and the __________ agency (below)? Name agencies involved in the linkage mechanism.

    * Education Agencies (Higher Ed., Voc. Ed., public and private professional schools)

    * Licensing Boards

    * Health Care Providers (professions and organizations)

* Budget and Policy-Making Organizations (legislature, governors' budget office)

* Health Planning Agencies (SHPDA, HSA'S, Health Statistics)

* Health Service Agencies (Health Dept., Mental Health, etc.)

a. What is the purpose of the relationship? What benefit does each partner derive from the relationship (e.g., resources obtained, political support, etc.)?

b. Where is staff support for interactions located (in one agency, in each partner, pooled in a third location)?

c. Is there a formal written contract or agreement for the relations? To what extent are procedures for interaction pre-specified (how many clauses are there in agreements)? If so, obtain copy of agreement.

d. Does the mechanism have formal authority to speak for and bind the agencies (on which issues)? Is the mechanism advisory to a board with formal authority (how often are recommendations overruled)?

e. Does the mechanism have continuous fiscal support from the members or from independent sources (e.g., a separate state or federal appropriation)? Has the mechanism remained in existence in spite of reorganizations, changes in administration or changes in individual actors?

f. From which level(s) in the partner agencies are the contact points for the linkage mechanism? How frequent are contacts? Are objectives of agencies compatible? Is there adequate understanding of the other's needs?

4. Coordination of Decisionmaking

a. Do linkage mechanisms facilitate the coordination of resources? Are resources exchanged or pooled?

b. Do mechanisms coordinate activities? Are activities independent, synchronized, or joint?

c. Are mechanisms permanent and continuous?

   d. How often (What %) are decisions of the group challenged or defied by other group members? By outside interest groups? When challenged by outside interest groups, do group members stand up for group decisions?

5. State Context - Where does health rank as a priority in the state government? Where does health manpower rank? What are the most significant health manpower problems in the state? Where is the impetus to address the problems? What mechanisms are used to address problems?

6. Issues. Describe decision issues which have been resolved or are still pending in the state.

   * Establishment of Education Programs: New school, new curriculum, expansion of class size, development of affiliations

   * Organization and utilization of staff (e.g., HMO legislation)

   * Quality Assurance - licensing and accreditation

   * Resource Allocation - budget, manpower programs

   - Where is the issue initiated? What has been the involvement of the (human service) agency? Which other actors had significant involvement?

   - Who manages the process? Are steps specified and routinized?

   - What effort (staff, $) was expended by your agency? By other major actors?

   - What role was taken by each actor? Which decision functions were addressed by each? How many actors performed each function?

   - To what extent was there planning input into decisions? (data, quick studies, use of comprehensive plans, use of standard formulas or criteria)? What is the source of planning input (which agency)?

   - To what extent was there collaboration among actors for each function in terms of information sharing, resource sharing, and sharing of goals and objectives?

- To what extent were tough issues raised? How often were there disagreements? How timely was each resolved?

7. Products

   a. What planning products or linkage mechanisms have been established by this agency? What has been the purpose and utility of each for coordination and implementation of decision-making?

   b. Has this agency supported the development of linking mechanisms and planning products of the linkage project (especially important if it is a superordinate agency)? What tangible and intangible support has been given?

   c. Which of the following decision techniques existed prior to 1974 and which exist now. How valid, useful and acceptable is each? Which organization(s) developed each technique? Did the linkage project or a linkage mechanism provide significant impetus? What were other sources of impetus for development (1202 planning, CHSS, etc.)?

      (1) Inventories of manpower and of training programs

      (2) On-going data systems to monitor progress

      (3) Method to determine needs

      (4) Method to project future supply and demand

      (5) Method to identify alternative solutions to problems

      (6) Method to identify goals and priorities

      (7) Plans for education, health, health manpower

      (8) Method to integrate components of the decision system

      (9) Method to implement plans

      (10) Method to evaluate and update plans

Guide C 4

Department of Health, Mental Health, or Other Social Service Agency

This agency will house service programs with use manpower. It also may house the State Health Planning Agency and/or the linkage project. The emphasis of questions is on the need for manpower, the manpower planning activity, and the support for the linkage concept (and the linkage project) from this administrative level.

1. Person Interviewed. Position in agency, who reports to whom, length of service, background in the state, in the state government and in planning.

2. Agency Description (obtain organizational chart)

    a. Organizational location with respect to health planning agency, linkage project, other social service agencies (mental health, aging, alcohol, youth, Medicaid, etc.).

    b. Program priorities of agency. Organizational subunits. Number of staff and budget of each.

    c. Comprehensive planning activity - % of budget and staff planning for future services? % of planning devoted to manpower planning?

    d. Governance. Is there an independent board? What authority does the board have over budgets, policies, personnel, plans? Is there an umbrellaagency whose services are included? What authority does it have (budget coordination, policy review, etc.)?

    e. History. Are there recent reorganizations? How have they impacted the development of planning and organizational linkages? Are there long standing agency rivalries with other agencies?

3. Linkages: What mechanisms are there for lateral relations among human service agencies and between your agency and the __________ agency (below)? Name agencies involved in the linkage mechanism.

    * Education Agencies (Higher Ed., Voc. Ed., public and private professional schools)

    * Licensing Boards

* Health Care Providers (professions and organizations)

* Budget and Policy-Making Organizations (legislative, governor's budget office)

* Health Planning Agencies (SHPDA, HSA's, Health Statistics)

a. What is the purpose of the relationship? What benefit does each partner derive from the relationship (e.g., resources obtained, political support, etc.)?

b. Where is staff support for interactions located (in one agency, in each partner, pooled in a third location)?

c. Is there a formal written contract or agreement for the relations? To what extent are procedures for interaction pre-specified (how many clauses are there in agreements)? If so, obtain agreement.

d. Does the mechanism have formal authority to speak for and bind the agencies (on which issues)? Is the mechanism advisory to a board with formal authority (how often are recommendations overruled)?

e. Does the mechanism have continuous fiscal support from the members or from independent sources (e.g., a separate state or federal appropriation)? Has the mechanism remained in existence in spite of reorganizations, changes in administration or changes in individual actors?

f. From which level(s) in the partner agencies are the contact points for the linkage mechanism? How frequent are contacts? Are objectives of agencies compatible? Is there adequate understanding of the other's needs?

4. Coordination of Decisionmaking

a. Do linkage mechanisms facilitate the coordination of resources? Are resource exchanged, or pooled?

b. Do mechanisms coordinate activities? Are activities independent, synchronized, or joint?

c. Are mechanisms permanent and continuous?

d. How often (what %) are decisions of the group challenged or defied by other group members? By outside interest groups? When challenged by outside interest groups, do group members stand up for group decisions?

5. State Context: Where does health and social service rank among the state's priorities? What are the most significant health manpower problems in the state? What are demographic and political factors in the state which most affect health care delivery and planning for health care?

6. Issues. Describe decision issues which have been resolved or are still pending in the state.

   * Establishment of Education Programs

   * Organization and utilization of staff (e.g., HMO legislation)

   * Quality Assurance - Licensing and accreditation

   * Resource Allocation - budget, manpower programs

   - Where is the issue initiated? What has been the involvement of the (human service) agency? Which other actors had significant involvement?

   - Who manages the process? Are steps specified and routinized?

   - What effort (staff, $) was expended by your agency? By other major actors?

   - What role was taken by each actor? Which decision functions were addressed by each? How many actors performed each function?

   - To what extent was there planning input into decisions? (data, quick studies, use of comprehensive plans, use of standard formulas or criteria)? What is the source of planning input (which agency)?

   - To what extent was there collaboration among actors for each function in terms of information sharing, resource sharing, and sharing of goals and objectives?

   - To what extent were tough issues raised? How often were there disagreements? Was each resolved in a timely way?

7. Products and Impacts

a. What planning products or linkage mechanisms have been established by this agency? What has been the purpose and utility of each for coordination and implementation of decision-making?

b. Has this agency supported the development of linking mechanisms and planning products of the linkage project (especially important if it is a superordinate agency)? What tangible and intangible support has been given?

c. Which of the following decision techniques existed prior to 1974 and which exist now. How valid, useful and acceptable is each? Which organization(s) developed each technique? Did the linkage project or a linkage mechanism provide significant impetus? What were other sources of impetus for development (1202 planning, CHSS, etc.)?

(1) Inventories of manpower and of training programs

(2) On-going data systems to monitor progress

(3) Method to determine needs

(4) Method to project future supply and demand

(5) Method to identify alternative solutions to problems

(6) Method to identify goals and priorities

(7) Plans for education, health, health manpower

(8) Method to integrate components of the decision system

(9) Method to implement plans

(10) Method to evaluate and update plans

HSA - Located in Health Service sector with major emphasis on local area planning for service delivery. Manpower is one of serveral resources which the agency plans for. The extent which the agency coordinates manpower planning activity at a local level and feeds information to the state planners is the prime concern.

1. Person Interviewed: Position, role, length of service, background

2. Agency description

   a. Priorities of Agency. Where do manpower concerns fit in priorities of agency? How are manpower concerns incorporated into plans? Is there a staff specialist in manpower projections? Proportion of time and resource spent on: designation of shortage areas, determining needs for different manpower categories, recruitment of manpower?

   b. Methods. What quantitative and qualitative methods are used to determine manpower needs, to determine educational needs, to determine service needs, to evaluate and update plans.

   c. Data. Where is data for manpower supply and demand obtained? How accurate, reliable, comprehensive, and timely is it?

   d. Manpower Planning. Are specific needs for more or less manpower in planning specified? Which professions are emphasized?

   e. Implementation. How are manpower objectives implemented? What agencies must act on recommendations? Where does funding come from? How are autonomous organizations persuaded to act?

3. Linkages

a. Staff Linkages. Are there staff linkages to local educational institutions to coordinate programs with area needs in Allied Health, Nursing, Medicine? Do staff coordinate with professional associations on manpower programs or for data? Is there coordination of local hospital planning? Does the HSA help professionals plan for types of services to train for?

b. Board Linkages. Are there Board members from educational institutions? Do Board members raise questions of linkage to local training institutions to supply the appropriate number and type of manpower? Does Board provide a link to professional organizations, Third party payors, etc.?

c. Relation to SHPDA. How are planning roles for manpower divided between HSA's and the SHPDA.

4. Context

a. Area Characteristics. What are the general economic and demographic characteristics of the area?

b. Manpower Problems. What are major problems in the area for manpower: supply, number specialties, distribution.

c. State Context. Where does health and social service rank among the state's priorities? What are the most significant health manpower problems in the state? What are demographic and political factors in the state which most affect health care delivery and planning for health care?

5. Issues. Decribe decision issues which have been resolved or are still pending in the state.

   * Establishment of Education Programs
   * Organization and utilization of staff (e.g., HMO legislation)
   * Quality Assurance - licensing and accreditation
   * Resource Allocation - budget, manpower programs

   - Where is the issue initiated? What has been the involvement of the (human service) agency? Which other actors had significant involvement?
   - Who manages the process? Are steps specified and routinized?
   - What effort (staff, $) was expended by your agency? By other major actors?
   - What role was taken by each actor? Which decision functions were addressed by each? How many actors performed each function?
   - To what extent was there planning input into decision? (data, quick studies, use of comprehensive plans, use of standard formulas or criteria)? What is the source of planning input (which agency)?
   - To what extent was there collaboration among actors for each function in terms of information sharing, resource sharing, and sharing of goals and objectives?
   - To what extent were tough issues raised? How often were there disagreements? Was each resolved in a timely way?

6. Products and Impacts

   a. What planning products or linkage mechanisms have been established by this agency? What has been the purpose and utility of each for coordination and implementation of decision-making?

b. Has this agency supported the development of linking mechanisms and planning products of the linkage project (especially important if it is a superordinate agency)? What tangible and intangible support has been given?

c. Which of the following decision techniques existed prior to 1974 and which exist now. How valid, useful and acceptable is each? Which organization(s) developed each technique? Did the linkage project or a linkage mechanism provide significant impetus? What were other sources of impetus for development (1202 planning, CHSS, etc.)?

(1) Inventories of manpower and of training programs

(2) On-going data systems to monitor progress

(3) Method to determine needs

(4) Method to project future supply and demand

(5) Method to identify alternative solutions to problems

(6) Method to identify goals and priorities

(7) Plans for education, health, health manpower

(8) Method to integrate components of the decision system

(9) Method to implement plans

(10) Method to evaluate and update plans

7. Coordination of Decisionmaking

a. Do linkage mechanisms facilitate the coordination of resources? Are resources exchanged, or pooled?

b. Do mechanisms coordinate activities? Are activities independent, synchronized, or joint?

c. Are mechanisms permanent and continuous?

d. How often (what %) are decisions of the group challenged or defied by other group members? By outside interest groups? When challendge by outside interest groups, do group members stand up for group decisions?

State Health Statistics Agency

From the tradition of vital statistics records, the data agency is usually in the health department. This agency is usually an important support activity for linkage development. In addition to the scope and effectiveness of its data collection effort, the relationships to health planning, education planning, and to private actors is important.

1. Person Interviewed: position, role, length of service, background

2. Function of Agency

   a. Location?

   b. Legal responsibility? Which decision functions are performed by the agency? (data, analysis, priorities, planning, choices, action, evaluation)

   c. Resources - skills, $, equipment (computer system)

   d. Major thrust of activity
      * CHSS components
      * Priority of manpower data, education program data
      * How are priorities set? From where do mandates and requests for data come?

   e. Organizational chart for the agency

3. Linkages

   a. SHPDA in same department? Report to same boss? Report to SHPDA? Are interactions cooperative? What mechanisms are used to maintain communication?

   b. Professional associations and licensing boards. What are the key mechanisms for obtaining occupational data? To what extent do associations influence data collection through the registration boards? To what extent are associations cooperative in collecting data? What is the quid pro quo -- what service is provided to agencies which help collect data? (use of data, technical assistance on data collection registration or other EDP jobs, analysis of data)

c. HSA's

- What is the nature of relations with HSA's (provide data, receive help in obtaining data from the community, determination of data needs and requirements for the state, technical assistance to HSA on analysis of data)
- What is the quality of relations with HSA's? How often is there contact with the HSA's? To what extent are objectives shared? To what extent are methods compatible? To what extent are relations compatible?
- What mechanisms are used to relate? (formal agreements, liaison committees, informal staff contact, joint activities, etc.)

d. Education agencies and health occupations schools

- What is the nature of relations (data provision, obtain data, determine need for data, technical assistance)
- What is the quality of relations? Amount of contact? Compatibility of objectives and methods? Understanding of the other's point of view?
- What are key mechanisms for interaction?

3. Issues and Processes

To what extent is data used in the budget process? In program planning decisions? What changes are notable in the decision process during the past 5 years?

4. Impacts

What specific products have been developed? Are data and analyses considered to be valid, accurate, reliable, acceptable politically, useful?

See Detailed Discussion Guide for more questions on Description of Linkage Mechanisms, Description of the State Decision System and Planning Products. (Guide #14)

Licensing Board - Each board is an agent of the state to register and examine professionals and generally administer practice laws by monitoring individual practioners for protection of both the public and the profession. Boards may be involved in continuous registration and data gathering, in planning for manpower and programs, and in quality review of programs.

These questions can be asked of a single activities. Single boards should be asked about other boards and administrative agencies should be asked about boards in general.

1. Person Interviewed - we would like to speak with the executive secretary or other full-time staff with a broad perspective.

2. Agency

   a. Functions

      ... Examination and Licensing
      ... Periodic registration
      ... Accreditation of training programs
      ... Establishment of standards for practive
      ... Manpower employment program development
      ... Curriculum development
      ... Manpower planning

   b. Degree of autonomy...
   report to (Governor, administrative agency)

      ... Does board do own administrative work (registration, collection of fees, etc.)?
      ... Which, if any, functions are centralized for all boards? Does a central administration have any say in board policies?
      ... Degree of fiscal autonomy; who approves budge?

   c. How are board members selected? Length of term?

d. Amount of staff and budget? Is the agency self sustaining on fees? Where do surplus fees go or who makes up deficits?

3. Linkages: Describe the mechanisms for lateral relations between your agency and the __________ agency (below)? Name agencies involved in the linkage mechanism.

   * Education Agencies (Higher Ed., Voc. Ed., public and private professional schools)

   * Health Care Providers (professions and organizations)

   * Budget and Policy-Making Organizations (legislative, governors' budget office)

   * Health Planning Agencies (SHPDA, HSA's, Health Statistics)

   * Health Service Agencies (Dept. Health, Dept. Mental Health, etc.)

4. What are major health manpower problems for the profession you serve?

5. Linkage Impacts and Decisionmaking

   a. Is the board connected to data gathering activities for health manpower? What is the quality of the relationship? How well do professionals accept and comply with data requests? What services does the board receive in exchange for obtaining data (e.g., computer processing, system design)? Does the Board us the data? Is the data fenerally considered to be accurate and reliable.

   b. Is the board connected to processes to establish priorities or plans or to provide analysis of data? Through what mechanisms? Are such priorities, plans, and analyses considered to be valid and acceptable?

c. Has the board been involved in decision-making for professional practice laws? Through what mechanisms? Have linkages to other boards been established? Are there mechanisms to negotiate between professional groups? Have mechanisms for interprofessional negotiations and decisions been effective.

d. Has the board been involved in decisions about manpower training program development or accreditation? What mechanisms have been used to coordinate these decisions? Has there been planning input to the decisions? How effective has the coordination and the planning input been?

If warranted by time, cooperativeness and information of the respondent, see detailed questions on Linkages, Issues and Products (Guide #14).

Department of Higher Education, Community Education, or Vocational Education is the staff agency responsible to a coordinating board or governing board of higher education. Interview should address the role and function of board as well as the staff agency in planning and coordination for higher education.

1. Person interviewed: Position, role, length of service, background

2. Agency description

   a. Which educational institutions in the state are administered by the board? What proportion of health education in the state is under the authority of the board?

      ... Profession schools (MODVOPP)
      ... Bacculaureate degree granting schools (4 year)
      ... Associate degree granting schools (community colleges, vocational schools)

   b. What are functions and responsiblities of the board in the areas of a) Program development review and approval (new programs, continuing programs) b) Quality review of programs c) Budget approval - (Are budgets screened and coordinated by the board for the legislature or does the legislature allocate funds to the board to be allocated to institutions)? What emphasis and priority does the board place on health manpower issues?

   c. Which other agencies have responsibilities for health occupations education (Department of Community Education Department of Vocational Education, Department of Education, private schools and hospitals)? How are agencies arranged structurally in the states education sector? (Board coordination, lateral coordination between agencies, independent agencies with separate boards). What informal and formal mechanisms are used to coordinate with them?

d. What planning activities are carried out by the department? Is there an educational master plan for health occupations?

   1. What need criteria are used in planning (need for manpower for services, need for educational opportunities, educational needs for rounded programs in education institutions).

   2. Where are data obtained on programs and graduates on manpower in employment markets, on service needs for health manpower? What mechanisms are used to coordinate data?

   3. Where are priorities set and where are comprehensive plans approved? Which outside actors get involved (e.g. providers and professional associations, health planners, etc.). What mechanisms are used to coordinate activity?

   4. Is the authority of the board sufficient to implement plans or is cooperation of other agencies required? What mechanisms are used to increase cooperation?

e. Resources of Agency - number of staff, background and skills of each, data sources, budget, grants and contracts.

   f. Membership of Board. How selected? Term of office? Do board members represent constituencies? Are Board members an effective link to constituencies (e.g. unions, consumers)?

3. Linkages

   a. To what extent do educational institutions coordinate with HSA's, hospitals and other local groups to plan for and meet manpower needs of the communities? What mechanisms are used? (e.g. affiliations, HSA boards, planning committees).

   b. To what extent is there coordination with outside accrediting agencies on review of programs? Does the accreditation process pay attention to planning objectives?

4. State Context

   a. What are major health manpower problems facing the state? What strategies are being used to address problems?

   b. How fast has health occupations education grown (or declined) in numbers of students and in budgets?

   c. In what way have region economic and political factors entered into the problems and proposed solutions to problems?

5. Issues and processes - describe the process for resolved and unresolved decisions in the areas of program development; quality assurance (How do educational institutions become involved in requirements of practice acts? Accreditation?); Resource allocation, manpower utilization.

6. Products and Impacts

   For details on issues, mechanisms and products see Guide # 14.

Educational Institution: School of Medicine, Osteopathy, Nusing or Allied Health. A medical center is an umbrella organization of health sciences schools usually dominated by the School of Medicine but including one or more of nursing, allied health, dentistry, pharmacy schools, and corresponding clinical facilities. We will want to interview an administrator in the umbrella organization or the Medical School or teaching hosptial depending on which is most central to its policy structures of the complex. Similar questions are relevant for community colleges or other free standing allied health schools

1. Person Interviewed: Position, role, length of service, background

2. Institutional Description

   Name the types of health occupations education and the size (# of students) of each. How has this changed in the past 5 years?

   a. Domain. What is the area served by the school (in terms of student body and location of graduates)?

      ... Primarily local
      ... Substate region
      ... State
      ... Regional
      ... National
      ... International

   b. Resources.

      magnitude of total Budget in $ __________.

      1. How much goes to each of medicine, dentistry, nursing, allied health, etc.? What proportion is from State, Federal and private sources?

2. What proportion of the faculty is stricty full-time?

   ... full-time?

   ... adjunct?

3. Dependence on private US. public resources:
   What proportion of clincial facilities (e.g. beds) are owned?

   1. How many affiliated hospitals are there? Which ones are within walking distance (how many beds)? Which are in commuting distance (how many beds)? Which are remote (# beds)?

   2. What proportion of students are trained in facilities in the Medical Center? in facilities in the city? in remote facilities?

   3. What proportion of residents are on state stipends? Are residents rotated in the same proportions as students? What proportion of residents are at home base hospitals versus affiliates at one time? Which affiliates have residents of their own (or from other schools)?

c. Governance

1. ... Private, independent board
   ... Private, state aided
   ... State supported

2. ... free standing
   ... part of university
   ... independent unit of university system

d. Planning.

1. What types of planning are done in the school?

... Curriculum Planning
... Financial Planning
... Facilities Planning
... Manpower Planning

What proportion of planning effort goes to each type?

2. What are the types and numbers of planning staff available?

   Do faculty contribute to planning analyses? (e.g., to identify manpower needs or project future needs)

3. Where are data obtained for planning?

4. Describe outside influences and direct input into establishment of plans and priorities for education from: professional groups, State government, local government, planning agencies, and local hospitals (health delivery institutions).

5. Do other (public, private) schools in the state perform planning functions similar in type and magnitude to those performed here? What are significant differences?

6. How have planning inputs to decision-making changed during the past 5 years? To what would you attribute changes?

3. Context. What are major health manpower problems in the State? What are characteristics of the State's regions and the State's political structure which impact on problems and alternative solutions?

4. What interactions are there with the following agencies? What is the level of interaction? How permanent are relations?

   ... State Health Planning
   ... State Health Statistics
   ... HSA
   ... Higher Education Department
   ... Other public or private schools
   ... Professional Associations
   ... Licensing Boards
   ... State Legislature
   ... State Budget Office
   ... Local Hospitals
   ... State Hospitals

5. Issues.

   a. New educational curriculum

   b. Describe the process of budget allocation for ongoing educational programs within the institution.

   c. Is the school involved in developing and demonstrating staffing arrangements for health delivery (e.g., HMO's interdisciplinary terms)? How are these ideas disseminated into the community?

   d. How does the school become involved in establishing licensing requirements for its graduates?

6. Products and Impacts. Are planning products used by the school in development of programs. Is the school adequately informed about health manpower activities of other agencies and institutions in the State?

Is there sufficient input or representation in decisions?

Are decisions functions well coordinated?

If warranted by time, cooperativeness, and information of respondent ask detailed questions on Linkages, issues, and products (Guide #14)

Professional Association - Individual professional groups provide direct services to their members in manpower areas including placement and continuing education. Some associations are also collective bargaining units (e.g. Nurses) and most associations are influential in state legislative politics (notably, the Medical Society). Associations are likely to be involved in planning through data collection and quality assurances through connections to boards and national accreditation bodies.

1. Person interviewed - we would like to speak to the executive secretary, a person who knows member's positions and association programs.

2. Agancy Description
   - Number of members, percentage of all practioners in state
   - Numbers relative to other associations (e.g. the LPN association for nurses)
   - Major objectives of the association
   - Functions performed
     ... Data collection
     ... Continuing education
     ... Recruitment, placement services
     ... Registration and certification
     ... Lobbying
     ... Collective bargaining
     ... Role in accreditation of programs and conduct of licensing
   - Staff and fiscal resources for each manpower function

3. State Context - Major manpower problems.

4. Linkages

a. Does the association have representation on planning committees? Is representation a member of the staff?

b. What is the relationship between the association and the licensing board?

c. How is the association connected to the state university and other professional training schools (continuing education, specification of curriculum needs for planning)?

d. Does the association relate to manpower agencies and state or federal manpower programs (Dept. of Labor, CETA, etc.)?

e. How does the association and the profession in general relate to other professions (e.g. RN vs LPN, Opthalmologist vs. Optometrist, M.D. vs. Chiropractor)? What mechanisms are used to communicate? To what extent are their joint efforts to plan and work out roles?

5. Issues and Decisions

What is the position of the association on decision issues in the state (e.g. Licensing of new professions, such as physician assistants, development of new training programs, organization of new health delivery facilities such as HMO's).

How satisfactorily have such issues been resolved? Has the ability to address and resolve issues increased in the past 5 years? To what do you attribute any change?

6. Assessment of Planning and Decision Making

a. Name planning products with which you are familiar. Assess each in terms of the validity of methods, accuracy of information and utility of results to educators, to manpower users, and to your association.

b. Assess the extent of collaboration on major decisions. To what would you attribute the coordination or lack of coordination of decision-makers.

If warranted by time, cooperativeness and information of the respondent, See Detailed Questions on Linkage mechanisms, Decision issues, and planning products. (Guide #14)

Hospital Association. Located in health service sector, but also many hospital members will operate allied health and nurse training programs and may will be affiliated for physician and dental education.

1. Person Interviewed: Position, role, length of service, background

2. Agency Description
   a. What proportion of hospitals are represented by the association?
   b. What services are provided? Are there manpower service (recruitment, placement)?
   c. How are services organzed?

3. State Context
   a. What are problems and priorities with respect to manpower for hospitals? Is manpower planning related to cost containment?
   b. What have been trends in Hospital education of health manpower?
      - Increased, closed down, or affiliated independent training activities?
      - Is there currently a strain on the amount of facilities available to train the number of students being supplied by schools: M.D.'s? Nurses? Associated? Has there been such a strain in the past or is one anticipated?
   c. What is the association's position with respect to alternative organization and staffing for health delivery (Satellite clinics, HMO's?)

What mechanisms has the association been involved in or know about to develop alternative delivery patterns?

4. Linkages

What percent of hospitals have long-range plans for services? How are those plans coordinated with other health providers on an area and statewide basis? Are there planning consortia or informat connections?

What do HSA's do to coordinate planning among hospitals?

What coordination is there at the local level between users (Hospitals) and producers (schools) and planners (HSA's) for manpower?

Other linkages? Nature of linkage
Quality of Relation
Mechanisms

5. Decision Issues

Where are priorities for Health Manpower plans set? Does the Hospital Association give input? Are priorities acceptable, feasible? What conflicts arise? How are they resolved?

Ditto for Data, Analysis, Evaluation

If warranted by the time, cooperativeness and information of the respondent, see detailed questions for more on linkage mechanisms, decision issues, and planning products (Guide #14)

Budget Agency. Agency is likely an arm to the Governor in preparing resource allocation recommendations, so that it can be a very influential conduit in the establishment of policy and the development of programs.

1. Person Interviewed

2. Agency Description
   a. What are functions and authority of the agency with respect to budget review? Are there any state planning functions in the agency.

   b. Internal organization, Agency resources, etc., from general guide.

3. State Context

   a. What is fiscal position of the state overall?
   b. What are priorities for state expenditures? Where is health; health education; and health manpower in the priorities?
   c. What are major problems in health manpower?
   d. 1. What is the proportion of State government expenditure and amount for (approximately):
         Education
         Higher Education
         Health Education
         Health Manpower generally
      2. What proportion of total state expenditures on each category above is private? What proportion is Federal?

4. Linkages and Decision Processes

a. Describe briefly the procedure for budget allocation. In which categories are health education, and health manpower programs incorporated into state budgets, etc.? Which programs have line item budgets (medical school, family medicine, etc.)? Are specific formulas applied to budgets?

b. Where is budget information obtained concerning health manpower programs? How well is information coordinated prior to submission to the governor and legislature? Prior to acquisition by the budget Agency? is this Agency involved in coordination of data and information? How useful, accurate, and timely is the information?

c. Where are analyses of budget issues done in the state? Are analyses coordinated? How many independent analyses are considered in allocation decisions, how do they become entered into decision-making (in the Legislature, in the budget bureau analysis, in a coordinating agency)?

d. Where are priorities for budget allocations set (in legislature, bureaucracy, governor's office)? Where do agencies coordinate priorities. How does the budget office participate in the establishment of priorities?

e. If coordinating agencies (e.g., Council of Higher Education) screen budget request, how often (%) are they altered by the budget bureau? By the legislature?

f. Is the budget office represented in a systematic way in the development of manpower programs?

5. Products and Impacts

   a. What recent planning products are you familiar with? Assess each in terms of the validity of information and utility of results.

   b. To what extent has there been coordination among various groups on budget decisions affecting health manpower. What effective mechanisms for coordination are you familiar with?

To the extent that there is time and the respondent has additional information, supplement these questions with detailed questions (Guide #14)

Legislature. Along with the governor, this is generally the key to overall policy with respect to major education program expenditures (e.g., medical school) and professional practice regulation. The legislature operates through committees, more than one of which may handle health manpower issues (Health, Education, Appropriations). Depending on the state the legislature can be more or less directly involved in program review, quality assurance, and resource allocation. Normally, we would prefer interviewing committee staff, if available.

1. If the interview is with a Legislator, how long has he/she been in the legislature and in the committee? What does the committee's responsibility entail? What district is he/she representing? What are his/her constituents' views of health manpower problems and programs?

2. Description of Legislature

   a. Overall composition: # members, % Democrat/Republican, general political orientation

   b. Committee Structure for health manpower: Name relevant committees (Education, Health, Appropriations) and number of staff for each. What is priority of health manpower issues generally in each committee?

   c. Legislative Power: How long is legislature in session? Generally, how does the constitutional authority of the governor and executive branch compare to that of the legislature with respect to major policy (What proportion of legislative initiatives does the administration get approved? What proportion of legislative initative can be passed if the governor opposes?)

Which health manpower issues require legislative approval (program development, quality assurance, resource allocation, utilization for service?)

3. State Context. (This is an important topic for this interview)

   a. How do health manpower problems rank in priority among other legislative concerns? What ranks ahead of health manpower?

   b. What are the most significant political, economic, or demographic factors in the state which affect health manpower problems and solutions (e.g., migration, FMG's, fiscal considerations, size and density of population, interprofessional conflicts)

   c. What are the key health manpower problems for consideration by the legislature? What were they identified and how did they come to the attention of the legislature?

   d. What has been the state's experience with health and education planning (PL 93-641, 1202, etc.)?

   e. State Resources. Approximate total State Budget, % Federal? % of budget for education, health education, health? What are the major health resources in the state? What resources are lacking most? What proportion of resources are public vs private (for educational enrollments, manpower, facilities)?

4. Linkages. What formal procedures or mechanisms -- study groups, committees, shared staffing, etc. -- exist where the legislator and/or the legislative staff participate

in formulation of plans or policies for health manpower? What informal links are there with agencies, and private organizations which regularly impact on manpower decisions? Relative proportion of formal and informal? (See general interview guide for elaboration.)

5. Decisions.

   a. Decribe the process of program approval for a manpower training program (e.g., a school of medicine or optometry, a family medicine program (this one is important to most legislatures).

   b. Describe the process of state budget allocation for health education and other manpower programs? What kinds of negotiation go on between the budget office and the legislature; between individual agencies and legislators; between private agencies and the legislature?

   c. Describe the process of changing or initiating a professional practice act (e.g., for Physician Assistant, Nurse Midwife, Optometrist)? What degree of flexibility in rules is tolerable for professionals, legislators, or other interest groups such as consumers, employers of manpower? (Ask above questions for current time, ask about changes in past 5 years) (see general guide for detailed process questions.)

6. Products and Impacts. Obtain general assessment of coordination, quality of specific products, and impact of planning on decision-making. Has this changed?

If warranted by time, cooperation, and knowledge of interviewee, see detailed questions on Linkage process, Issues, and products (Guide #14)

Guide C 14

Detailed Questions on Linkages, Issues and Products

1. Linkages: What mechanisms are there for lateral relations between your agency and the __________ agency (below)? Name agencies involved in the linkage mechanism.

   * Education Agencies (Higher Ed., Voc. Ed., public and private professional schools)

   * Licensing Boards

   * Health Care Providers (professions and organizations)

   * Budget and Policy-Making Organizations (legislature, governors' budget office)

   * Health Planning Agencies (SHPDA, HSA's, Health Statistics)

   * Health Service Agencies (Dept. Health, Dept. Mental Health, etc.)

   a. What is the purpose of the relationship? What benefit does each partner derive from the relationship (e.g., resources obtained, political support, etc.)?

   b. Where is staff support for interactions located (in one agency, in each partner, pooled in a third location)?

   c. Is there a formal written contract or agreement for the relations? To what extent are procedures for interaction pre-specified (how many clauses are there in agreements)? If so, obtain agreement

   d. Does the mechanism have formal authority to speak for and bind the agencies (on which issues)? Is the mechanism advisory to a board with formal authority (how often are recommendations overruled)?

e. Does the mechanism have continuous fiscal support from the members or from independent sources (e.g., a separate state of federal appropriation)? Has the mechanism remained in existence in spite of reorganizations, changes in administration or changes in individual actors?

f. From which level(s) in the partner agencies are the contact points for the linkage mechanism? How frequent are contacts? Are objectives of agencies compatible? Is there adequate understanding of the other's needs?

2. Coordination of Decisionmaking

   a. Do linkage mechanisms facilitate the coordination of resources? Are resource exchanged, or pooled?

   b. Do mechanisms coordinate activities? Are activities independent, synchronized, or joint?

   c. Are mechanisms permanent and continuous?

   d. How often (what %) are decisions of the group challenged or defied by other group members? By outside interest groups? When challenged by outside interest groups, do group members stand up for group decisions?

3. State Context: Where does health and social service rank among the state's priorities? What are the most significant health manpower problems in the state? What are demographic and political factors in the state which most affect health care delivery and planning for health care?

4. Issues. Describe decision issues which have been resolved or are still pending in the state.

   * Establishment of Education Programs

   * Organization and utilization of staff (e.g., HMO legislation)

   * Quality Assurance - licensing and accreditation

   * Resource Allocation - budget, manpower programs

- Where is the issue initiated? What has been the involvement of the (human service) agency? Which other actors had significant involvement?

- Who manages the process? Are steps specified and routinized?

- What effort (staff, $) was expended by your agency? By other major actors?

- What role was taken by each actor? Which decision functions were addressed by each? How many actors performed each function?

- To what extent was there planning input into decisions? (data, quick studies, use of comprehensive plans, use of standard formulas or criteria)? What is the source of planning input (which agency)?

- To what extent was there collaboration among actors for each function in terms of information sharing, resource sharing, and sharing of goals and objectives?

- To what extent were tough issues raised? How often were there disagreements? Was each resolved in a timely way?

5. Products and Impacts

a. What planning products or linkage mechanisms have been established by this agency? What has been the purpose and utility of each for coordination and implementation of decision-making?

b. Has this agency supported the development of linking mechanisms and planning products of the linkage project (especially important if it is a superordinate agency)? What tangible and intangible support has been given?

c. Which of the following decision techniques existed prior to 1974 and which exist now. How valid, useful and acceptable is each? Which organization(s) developed each technique? Did the linkage project or a linkage mechanism provide significant impetus? What were other sources of impetus for development (1202 planning, CHSS, etc.)?

(1) Inventories of manpower and of training programs
(2) On-going data systems to monitor progress
(3) Method to determine needs
(4) Method to project future supply and demand
(5) Method to identify alternative solutions to problems
(6) Method to identify goals and priorities
(7) Plans for education, health, health manpower
(8) Method to integrate components of the decision system
(9) Method to implement plans
(10) Method to evaluate and update plans

OUTLINE OF SITE REPORT

I. Context

- A. Geo-political Characteristics
    - State size and population characteristics
    - Regions
    - Politics
    - Resources
        - budget proportions from Fed.
        - budget to Education and Health
- B. Health Manpower Context
    - Priority of Health and Health Manpower
    - Specific problem areas: supply, production, distribution, level of training.
- C. Prior Planning
    - Information
    - Analysis and planning capacity
    - Decision locus
    - Coordination and linkage

II. Linkage Strategy

- A. Initiation -- Internal motivation vs. external response
- B. Project Goals -- Philosophy and objectives
- C. Resources -- Fiscal, matching funds, staff skills, volunteers
- D. Location -- Organizational position
- E. Identity -- Staff and resource organization, Visibility
- F. Scope -- Breadth of issues and manpower categories addressed
- G. Approach -- Major emphasis of approach
- H. Sequence -- Order of steps
- I. Concurrent Planning Developments -- desciption of Higher Education Planning; P.L. 93-641 implementation; CHSS; Nurse planning, etc.

D

III. Health Manpower Decision System

A. Structure and Function of Decision-Making

- Summary of consolidation, complexity and effort devoted to health manpower decisions in state within sectors and across sectors.

1. Health Services Sector
2. Health Manpower and Employment Sector
3. Health Occupations Education Sector
4. Health Policy-Finance Sector

B. Linkage Mechanisms and Network Development

- Summary of system comprehensiveness, centralization, and balance; formalization and institutionalization of network and Integration of Decision-Making

1. Major Mechanisms -- Extensiveness, formalization, intensity and institutionalization of mechanism
2. Bilateral Linkages -- Purpose, formalization, intensity, institutionalization

C. Decision Making Processes

- Summary of collaboration and competition, routinization and use of information in decision-making

1. Resource Allocation Decisions
2. Quality Assurance Decisions
3. Program Development Decisions
4. Manpower Utilization Decisions

IV. Linkage Impact

A. Planning and Decision-Making Products (pre and post)

1. Data
2. Methods
3. Priorities
4. Comprehensive Plans
5. Choices
6. Coordinated Initiation of Action

7. Control of Outcomes

B. Impact on Decision-Making

1. Summary, coordination of decision-making
2. Summary, planning input to decisions